November 14, 2014

Water Docket
Environmental Protection Agency
Mail Code 2822T
1200 Pennsylvania Ave., NW
Washington, DC 20460
E-mail: OW-Docket@epa.gov

Re: EPA-HQ-OW-2011-0880: NWF et al Comments on Proposed Rule Definition of "Waters of the United States" under the Clean Water Act

To Whom It May Concern:

Please accept for the record these comments on the proposed Environmental Protection Agency ("EPA") and the Army Corps of Engineers ("Corps") Proposed Rule Definition of "Waters of the United States" under the Clean Water Act ("Proposed Rule"). 79 Fed. Reg. 22188 (April 21, 2014). The agencies extended the deadline for submitting comments to November 14, 2014.

The National Wildlife Federation (NWF) represents over 4 million conservation-minded hunters, anglers, and outdoor enthusiasts nationwide. Conserving our Nation's wetlands, streams, and rivers is at the core of each organization's mission. Our organizations also have years of experience protecting these resources and dealing with the legal and other tools available to help us protect such resources. We have been active in advocating for Clean Water Act protections since the Act was passed in 1972.

Through comments to agencies, participation in the legislative and rulemaking processes regarding the Act, litigation, and in other forums, we have gained valuable expertise in the Act and how it is used to protect our waters. Additionally, we have been actively involved for more than a decade in the lengthy deliberations on the question of what are "waters of the United States," such as commenting on the Advance Notice of Proposed Rulemaking in 2003, the 2007 *Rapanos* guidance, and the draft 2011 "waters of the United States" guidance; and participation as Amici Curiae in the *Rapanos* Supreme Court case, and participation in numerous other federal court cases concerning the issue of "waters of the United States."

For the reasons set forth below, our organization strongly supports the proposed rule with respect to tributaries and adjacent waters, and urge the agencies to issue a final rule that includes as "waters of the United States" categories of non-adjacent "other waters" consistent with the scientific evidence of connectivity. We urge the agencies to move swiftly to finalize the "waters

of the United States" rule and to formally withdraw the 2003 *SWANCC* Guidance and the 2008 *Rapanos* Guidance.

For ease of navigation, and to highlight our main points, here are our headings and sub-headings with page numbers in parentheses:

DETAILED COMMENTS

I. This Rule is Needed and Offers the Best Opportunity in a Generation to Clarify the Waters that Are – and Are Not – Subject to Clean Water Act Protections.

The Waters of the United States rule is necessary to revise the longstanding definition of "waters of the United States" subject to the Clean Water Act in light of the Supreme Court's decisions in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers ("SWANCC")*,[1] and *Rapanos v. United States* and *Carabell v. United States* (consolidated as *Rapanos v. United States*, hereinafter referred to as *Rapanos*).[2]

The final rule must address the *SWANCC* and *Rapanos* decisions in a manner that is consistent with the Clean Water Act, its goals, and the applicable aquatic ecosystem science. Such a revised regulation will establish a binding rule that will provide for restoring longstanding clean water protections, and will provide greater certainty and consistency in jurisdictional determinations for landowners, agency field staff, and the courts. Courts generally give little deference to agency guidance or pronouncements that are not formal rules. [3] Rule-making to address this definition was clearly called for by at least two of the Supreme Court Justices in their *Rapanos* concurring opinions: Chief Justice Roberts[4] and Justice Breyer.[5]

A. *SWANCC, Rapanos,* and subsequent agency guidance have created a decade-long untenable status quo of uncertainty, confusion, wasteful litigation, and lost clean water protections.

In its 2001 *SWANCC* decision, the Court decided certain ponds in northern Illinois were not

[1] 531 U.S.159 (2001).
[2] 126 S. Ct. 2208 (2006).
[3] *See, e.g., Precon Development Corp. v. U.S. Army Corps of Engineers*, 633 F.3d 278 290 n.10 (4th Cir. 2011) (finding that guidance documents are not entitled to the increased deference afforded rules).
[4] 547 U.S. at 757-58.
[5] 547 U.S. at 812.

covered under the Act when jurisdiction was based solely on their use by migratory birds.[6] The *SWANCC* decision was narrow. It simply precluded the Corps from asserting jurisdiction over certain ponds based solely on their use by migratory birds. It did not overturn any aspect of the waters of the U.S. regulatory definition, including (a)(3) other waters provision, or any other regulatory provision of the Corps.[7]

Nevertheless, in 2003, the Bush Administration's EPA issued SWANCC guidance (immediately effective without advance public notice and comment) with an advanced notice of proposed rulemaking to potentially remove from Clean Water Act jurisdiction many non-navigable, intrastate wetlands, streams and other waters. That spring, 39 state agencies and hundreds of thousands of individuals and organizations submitted comments urging the EPA and the Corps not to reduce the historic scope of waters protected under the Clean Water Act. Later that year, **o**ver 200 members of Congress from both parties (including Rep. Paul Ryan among others) wrote a letter to President Bush urging him "not to pursue any policy or regulatory changes that would reduce the scope of waters protected under the Clean Water Act." In the face of such strong opposition, the Bush Administration abandoned its rulemaking to reduce the scope of waters covered by the Clean Water Act, but retained the SWANCC Guidance, effectively removing CWA protections for an estimated 20 million so-called "isolated" wetland acres.

In 2006 in *Rapanos*, the Supreme Court issued a fractured (4-1-4) decision involving wetlands adjacent to non-navigable tributaries of traditional navigable waters. Importantly, the Court issued five opinions, none of which garnered a majority. The cases were ultimately sent back to the lower courts for further review because a plurality of the Court (Justices Scalia, Alito, Thomas, and Chief Justice Roberts) and Justice Kennedy, concurring separately, agreed that the cases should be remanded. However, the plurality and Justice Kennedy's concurrence conflicted on almost every major point. While the plurality and Justice Kennedy expressed skepticism regarding the legality of the breadth of the government's regulatory definition of waters covered by the Act, the Court did not facially invalidate any of those regulations. Justice Kennedy's concurring opinion disagreed with the plurality opinion, and concluded that "waters of the U.S." includes wetlands that possess a "significant nexus" with navigable waters. He finds that wetlands possess the requisite significant nexus if they "either alone or in combination with similarly situated [wet] lands in the region, significantly affect the chemical, physical, and biological integrity" of other covered waters more readily understood as navigable. In addition, a four-member dissent, authored by Justice Stevens, argued for broad protection of waters under the Act as prescribed by the current regulations.

Recognizing the confusion wrought by their fractured decision, three of the various opinions urged the agencies to initiate a rulemaking clarifying the "waters of the U.S". While the federal courts await a revised waters of the U.S. rule, federal court litigation on "Waters of the U.S" mounts in the wake of *Rapanos*, leading to costly litigation, uncertainty, delay, and hampered Clean Water Act enforcement.

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[6] 531 U.S.159 (2001).

[7] The Migratory Bird Rule was contained in the 1986 preamble to the Corps' regulations, and is not a rule. 51 Fed. Reg. 41206, 41217 (Nov. 13, 1986). It is also important to note that *SWANCC* did not state migratory bird use cannot be considered as a factor in deterring the Act's jurisdiction over waters.

On June 5, 2007, nearly a year after the *Rapanos* decision, the Corps and the EPA issued its 2007 *Rapanos* Guidance without advance notice and public comment. The agencies amended this guidance in December 2008. This guidance largely ignores the Kennedy direction to base significant nexus determinations based on the combination of similarly situated waters and imposes a confusing and burdensome case-by-case jurisdictional requirement on most wetlands and streams. The 2008 guidance is contrary to sound science and creates an unworkable, time-consuming, expensive process that unnecessarily burdens decision makers and applicants.

From 2002 through 2010, bills languished in Congress that would have amended the Clean Water Act to clarify the Act's jurisdiction over the Waters of the United States. The Clean Water Restoration Act (CWRA) would have restored the historical scope of the Clean Water Act to those waters protected by the Act prior to the 2001 SWANCC decision, but would not have expanded the scope of jurisdiction beyond those covered at that time.

B. At stake in this rulemaking are millions of stream miles and wetland acres, drinking water supplies for 117 million Americans, healthy waters to support a healthy economy, and the effectiveness of the Clean Water Act itself.

The stakes related to the *SWANCC* and *Rapanos* Guidance are enormous. The 2003 *SWANCC* Guidance and the 2008 *Rapanos* Guidance have placed millions of wetland acres and tens of thousands of stream miles at risk of pollution and destruction. Given the interrelationship between waters, the existing Guidance has put all of the Nation's waters at risk by retreating from the comprehensive protections needed to achieve the Act's goals. The resources most at risk of losing the Act's protections as a result of the existing guidance are intermittent and ephemeral streams, many wetlands adjacent to such streams and other tributaries, and so-called "isolated" waters. In a 2009 Inspector General Report, EPA Region 5's Watersheds and Wetlands Branch Chief reported that "a lot of EPA Region 5 surface waters that would be considered Aquatic Resources of National Importance by EPA (e.g., fens, bogs, dunes/swales) are seen as non-jurisdictional to the Army Corps of Engineers due to *Rapanos* and *SWANCC."* [8] EPA acknowledged in its economic analysis of the 2011 draft guidance that "[s]ince *SWANCC*, no isolated waters have been declared jurisdictional by a federal agency." [9]

EPA has estimated that intermittent or ephemeral streams comprise fifty-nine percent of all streams miles in the United States, excluding Alaska.[10] In the arid west, as much as ninety-six

[8] *See* Congressionally Requested Report on Comments Related to Effects of Jurisdictional Uncertainty on Clean Water Act Implementation, Report No. 09-N-0149 at 8 (2009) (hereinafter, 2009 EPA OIG Report), at 5, *available at* http://www.epa.gov/oig/reports/2009/20090430-09-N-0149.pdf.

[9] U.S. Environmental Protection Agency, *Potential Indirect Economic Impacts and Benefits Associated with Guidance Clarifying the Scope of the Clean Water Act Jurisdiction*, at 3 (April 27, 2011) (2011 EPA Economic Analysis) *available at* http://www.epa.gov/owow/wetlands/pdf/wous_cost_benefit_estimate_summary.pdf.

[10] Letter from Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency to Jeanne Christie, Executive Director, Association of State Wetland Managers (Jan. 9, 2006) [mistakenly date stamped Jan. 9, 2005] at 2.

percent of all stream miles in some states are intermittent or ephemeral.[11] These headwater, intermittent, and ephemeral waters feed the public drinking water supplies of an estimated 117 million Americans.[12]

Moreover, twenty million acres of wetlands in the lower forty-eight states are considered "isolated."[13] Many more acres are adjacent to small streams that are not navigable, and therefore at risk.

Science has demonstrated that these waters that are losing protection are some of the most important waters to maintaining the integrity and health of larger waters and the aquatic ecosystem as a whole. If they are polluted, degraded or destroyed, the health of wildlife and people that depend on these resources will suffer. Wetlands also help combat global warming and their preservation as habitat, sources for water storage, flood control and the like will be vital to the ability of wildlife to adapt to the challenges of a warming planet.[14]

Since the 2001 *SWANCC* decision, depressional wetlands like prairie potholes are no longer being protected. Many intermittent and ephemeral streams and their adjacent wetlands have been put at risk of losing protections and are the subject of increased risk of pollution. According to the most recent national wetlands status and trends report, since 2004 the rate of wetland loss has increased by 140% over the previous report period. This is the first acceleration of wetland loss over a 50-year period, and the first since the passage of the 1972 Clean Water Act. This is the first study period occurring entirely post-*SWANCC*, and the U.S. Fish and Wildlife Service notes that the acceleration of wetland loss is likely at least partially explained by the jurisdictional confusion and the withdrawal of CWA protections by the agencies in the wake of the *SWANCC* and *Rapanos* cases.[15]

On a practical level, the 2008 Guidance has resulted in delays, confusion and uncertainty for applicants seeking permits along with increased workloads for Corps and EPA officials. EPA's costs to enforce CWA 402, 404, and 311 have increased significantly due to the incremental resources required to assert jurisdiction post *SWANCC* and *Rapanos*.[16]

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[11] *See*, *e.g.*, Letter from Stephen A. Owens, Director, Arizona Department of Environmental to Benjamin H. Grumbles, Assistant Administrator, Office of Water, U.S. Environmental Protection Agency (December 5, 2007) at 2 (describing the quality and function of surface waters in Arizona) (submitted as comments on the Guidance).

[12] U.S. Envtl. Protection Agency, Geographic Information Systems Analysis of Surface Drinking Water Provided By Intermittent, Ephemeral, and Headwater Streams in the U.S (State-by-State) and (County-by-County), http://water.epa.gov/lawsregs/guidance/wetlands/surface_drinking_water_index.cfm (last visited 7/19/11).

[13] *See* Pianin, Eric, *Administration Establishes New Wetlands Guidelines: 20 Million Acres Could Lose Protected Status, Groups Say*, WASHINGTON POST, pg. A5 (Jan. 11, 2003) (in discussing the 2003 agency guidance concerning *SWANCC* and so-called isolated wetlands, it states, "The new [guidance] would shift responsibility from the federal government to the states for protecting as much as 20 percent of the 100 million acres of wetlands in the Lower 48 states, according to official estimates.").

[14] *See*, *e.g.*, EPA National Water Program Strategy 2012: Response to Climate Change (Goal 6) http://water.epa.gov/scitech/climatechange/upload/epa_2012_climate_water_strategy_full_report_final.pdf.

[15] DAHL, T.E. 2011. Status and trends of wetlands in the conterminous United States 2004 to 2009, at 16 U.S. Department of the Interior; Fish and Wildlife Service, Washington, D.C. 108 pp.

[16] *See* 2014 EPA Economic Analysis at 30-31, at: http://www2.epa.gov/sites/production/files/2014-03/documents/wus_proposed_rule_economic_analysis.pdf.

The uncertainty regarding which waters are "waters of the United States" and what evidence is required to prove jurisdiction has compromised enforcement activities under the Act in the aftermath of the Supreme Court's opinions. The staff of EPA's Office of Enforcement and Compliance Assurance, Wetlands Enforcement Division summarized these effects in the 2009 Office of Inspector General Report:

> Overall, CWA enforcement activities [for violations on the prohibition against oil spills and limits on other pollutants like industrial waste, sewage plant effluent and filling waters] have decreased since *Rapanos* ruling. An estimated 489 enforcement cases (Sections 311, 402, and 404 combined) have been affected such that formal enforcement was not pursued as a result of jurisdictional uncertainty, case priority was lowered because of jurisdictional uncertainty, or lack of jurisdiction was asserted as an affirmative defense to the enforcement action. [17]

EPA's 2014 economic analysis of this proposed rule reports that:

> Because it can be difficult to establish where the CWA applies after the Supreme Court's decisions in *SWANCC* in 2001 and *Rapanos* in 2006, EPA enforcement managers have indicated that enforcement efforts have shifted away from small streams high in the watershed where jurisdiction is a potential issue. In short, EPA is focusing efforts on larger streams and rivers, where there is more certainty of establishing jurisdiction. A rule that more clearly protects small streams may lead to more comprehensive enforcement and therefore greater compliance with CWA program regulations. This, in turn, could ultimately save the costs of additional drinking water filtration, stream restoration, and other costs of repairing damage caused by pollution.[18]

By all accounts, the 2008 *Rapanos* Guidance has created confusion, bureaucratic red tape, and is adding time and expense to the decision making process for CWA permits. This uncertainty and added time and expense is undermining Clean Water Act enforcement and the overall effectiveness of the Clean Water Act in maintaining and restoring the nation's waters.

C. The clean water rule is the product of four years of rigorous and transparent scientific and public policy deliberation and offers the best chance in a generation to clarify the "Waters of the United States."

In the face of congressional inaction, in 2011, EPA and the Corps formally launched an administrative effort to clarify the "waters of the U.S." The agencies proposed guidance for determining CWA jurisdiction to replace guidance issued in 2003 and 2008. The proposal also announced the agencies' plans to proceed with rulemaking. The 2011 Proposed Guidance was the subject of extensive interagency review, economic analysis, and public notice and comment.

[17] 2009 Office of Inspector General Report, Report No. 09-N-0149 (April 30, 2009) at 1, at http://www.epa.gov/oig/reports/2009/20090430-09-N-0149.pdf.
[18] 2014 EPA Economic Analysis, *supra*, at 10.

Approximately 250,000 comments were submitted on the guidance, and these overwhelmingly supported the revised guidance. The proposed guidance would provide more certain and predictable protections for many streams and wetlands by comparison to the existing 2003 and 2008 guidance documents. The 2011 guidance still required a case-specific finding of significant nexus, but it found that based on the combined downstream effects of tributaries and adjacent waters within a watershed, significant nexus and CWA jurisdiction were highly likely to be established for these categories of waters.

In 2011-2012, on a parallel track, the EPA Office of Research and Development compiled a draft science report, *The Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence* (Connectivity Report).[19] This scientific report, based on peer-reviewed literature and an additional review by independent scientists, was prepared to inform the Administration's proposed rule clarifying which waters are protected under the Clean Water Act.

In July 2013, the EPA Science Advisory Board (SAB) launched an SAB Expert Scientific Peer Review of the Connectivity Report.[20] In September 2013, the agencies released the Draft Connectivity of Streams and Wetlands Science Report for public comment. Also in September 2013, after holding up action on the Clean Water guidance in the Office of Management (OMB) for almost two years, the Administration sent its draft proposed Clean Water Rule to OMB for interagency review.

In March 25, 2014, after months of interagency review, the EPA and the Army Corps of Engineers jointly proposed the formal rule clarifying and partially restoring the historic scope of waters protected under the Clean Water Act. The 2-page proposed rule text in the federal register is thoroughly explained and supported by a lengthy preamble, including both scientific and legal appendices, the publicly available Connectivity Science Report, and a thorough Economic Analysis. The 200-day public comment period ends November 14, 2014.[21]

In late September-early October 2014, the SAB issued reports affirming the scientific basis for the proposed rule (SAB Rule Letter) [22] and affirming – with recommendations for enhancing – the scientific accuracy of the Connectivity Report (SAB Connectivity Peer Review Letter).[23] The

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[19] *See* Draft Connectivity Report (September 2013) at: http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/7724357376745F48852579E60043E88C/$File/WOUS_ERD2_Sep2013.pdf.

[20] *See* SAB Peer Review process at: http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/Watershed%20Connectivity%20Report!OpenDocument&TableRow=2.1#2.

[21] *See* EPA Waters of the U.S. rulemaking process materials at: http://www2.epa.gov/uswaters.

[22] EPA SAB letter to Administrator McCarthy, *Science Advisory Board (SAB) Consideration of the Adequacy of the Scientific and Technical Basis of the EPA's Proposed Rule titled "Definition of Waters of the United States under the Clean Water Act"* (September 30, 2014) (SAB Rule Letter) at: http://yosemite.epa.gov/sab/sabproduct.nsf/518D4909D94CB6E585257D6300767DD6/$File/EPA-SAB-14-007+unsigned.pdf

[23] EPA SAB letter to Administrator McCarthy, *SAB Review of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence* (October 17, 2014) (SAB Connectivity Peer Review Letter) at:

Connectivity Report will be edited and strengthened in accordance with the SAB recommendations and both the SAB report and the Final Connectivity Report will inform the agencies' final "waters of the U.S." rule.

This rigorous and transparent proposed rulemaking process offers the best opportunity in a generation to clarify which waters are – and are not – waters of the U.S. subject to the Clean Water Act in a manner that provides more clarity than ever before. This rulemaking is informed by over 30 years of agency field experience, by the most comprehensive synthesis of stream and wetland connectivity science ever compiled, and by well over one million public comments.

We urge the agencies to move expeditiously to finalize a strong final rule, consistent with the rule's foundations in the connectivity science, the goals of the Clean Water Act, and the Kennedy significant nexus jurisdictional standard. Until that final rule is in place, the 2003 and 2008 guidance documents and the lack of a clear jurisdictional standard for judicial review continue to require cumbersome, confusing, and resource intensive case-specific jurisdictional determinations. And millions of stream miles and wetland acres, drinking water supplies for 117 million Americans, healthy waters to support a healthy economy, and the effectiveness of the Clean Water Act itself all remain at risk.

II. The proposed definition of "Waters of the United States" is consistent with the goals of the Clean Water Act and with legal precedent.

The Clean Water Act seeks "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" and eliminate water pollution by 1985.[24] The chief purpose of the Act is to prohibit point source discharges of pollutants into navigable waters, unless otherwise permitted by the Act.[25] For jurisdictional purposes, the Act defines "navigable waters" as "waters of the United States."[26]

The Act's chief regulatory tools exist in the form of two permitting programs for pollutant discharges into navigable waters: (1) the section 402 National Pollutant Discharge Elimination System ("NPDES") permitting program for most discharges (like sewage and industrial waste), to be administered by the EPA; and (2) the section 404 permitting program for discharges of dredged and fill material, to be administered by the Corps.[27] Among other programs, the Act also regulates oil spills,[28] requires the establishment of water quality standards for protected waters, and cleanup plans for waters that do not meet those standards.[29] The jurisdictional definition "waters of the United States" applies to all of these programs. There is no jurisdictional distinction between different programs of the Act.[30]

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http://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/AF1A28537854F8AB85257D74005003D2/$File/EPA-SAB-15-001+unsigned.pdf

[24] 33 U.S.C. §1251(a).

[25] *Id*. § 1311(a).

[26] *Id*. § 1362(7).

[27] *Id*. §§ 1342, 1344. Both of these programs can be delegated to states for administration. *Id*.

[28] *Id*. § 1321.

[29] *Id*. § 1313.

[30] *Id*. § 1362(7).

The CWA's structure and legislative history indicate that the scope of the Act's protections is not intended to be limited to the conventional concept of "navigable waters," which encompasses waters "used, or [] susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water."[31] This is reflected in current Corps and EPA regulations that provide protection for:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purpose by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;

(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.[32]

Rapanos is the third major case the Supreme Court has decided concerning the scope of the Act's protections. The first time the Supreme Court considered the question of what constituted "waters of the United States" was in *United States v. Riverside Bayview Homes, Inc.*, where the Court affirmed the broad jurisdiction of the CWA by finding the Corps properly regulated wetlands adjacent to a traditionally navigable water.[33]

[31] *The Daniel Ball*, 77 U.S. (10 Wall.) 557, 563 (1870).
[32] 33 C.F.R. 328.3(a); *see also* 40 C.F.R. 230.3(s).
[33] *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985). Also, in *International Paper Co. v. Ouellette*, the court affirmed the Act protected "virtually all bodies of water." 479 U.S. 481, 492 (1987).

Riverside Bayview supported broad CWA jurisdiction based on important ecological considerations and deferred to agency expertise regarding what scope of protection was needed to achieve the goals of the Act. In *Riverside Bayview*, the Court found "the Corps has concluded that wetlands adjacent to lakes, rivers, streams, and other bodies of water may function as integral parts of the aquatic environment" and held the regulation of such wetlands was therefore appropriate.[34] As reasons for upholding protection of adjacent wetlands under the Act, the Court noted the ability of wetlands to "filter and purify water draining into adjacent bodies of water, … to slow the flow of surface runoff into lakes, rivers, and streams and thus prevent flooding and erosion," and to "serve significant natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic … species."[35]

Sixteen years later, in *SWANCC*, the Court decided certain ponds in northern Illinois were not covered under the Act when jurisdiction was based solely on their use by migratory birds.[36] The *SWANCC* decision was narrow. It simply precluded the Corps from asserting jurisdiction over certain ponds based solely on their use by migratory birds. It did not overturn any aspect of the waters of the U.S. regulatory definition, including (a)(3) other waters provision, or any other regulatory provision of the Corps. Hence, the broad (a)(3) "other waters" element of the waters of the U.S. definition remains on the books today.[37]

In response to *SWANCC*, the Bush Administration issued an Advance Notice of Proposed Rulemaking to redefine jurisdiction under the Act.38 However, more than forty states, countless conservation organizations, including several hunting and fishing groups, and 220 members of Congress commented in overwhelming favor of keeping the current and broadly protective rules.39 Additionally, courts began construing *SWANCC* narrowly. As such, the rulemaking was abandoned in December 2003.[40]

The *Rapanos* case involved wetlands connected by surface flow to tributaries that eventually flowed into traditionally navigable waters.[41] The case involved three sites eleven to twenty miles away from the nearest traditionally navigable water.[42] Each site involved different tributary types, from a wide perennially flowing natural river, to intermittently flowing man-made or man-altered conveyances.[43] The related *Carabell* case involved a wetland that did not share a documented surface hydrological connection with its neighboring tributary, a ditch that carried

[34] *Riverside Bayview*, 474 U.S. at 135, 139.
[35] *Id.* at 134-35 (citations omitted) (internal quotation marks omitted).
[36] 531 U.S. 159 (2001).
[37] The Migratory Bird Rule was contained in the 1986 preamble to the Corps' regulations, and is not a rule. 51 Fed. Reg. 41206, 41217 (Nov. 13, 1986). It is also important to note that *SWANCC* did not state migratory bird use cannot be considered as a factor in deterring the Act's jurisdiction over waters.
[38] *See* 68 Fed. Reg. 1991 (Jan. 15, 2003).
[39] *Rapanos v. United States*, 126 S. Ct. 2208, 2256 n.4 (2006) (Stevens, J., dissenting); Letter from 220 Members of Congress to The Honorable George W. Bush, President of the United States (Nov. 24, 2003).
[40] Environmental Protection Agency, *Watershed News, No New Rule on Federal Regulatory Jurisdiction over Isolated Wetlands*, (Dec. 16, 2003) (stating, "EPA and the Army Corps of Engineers announced that they would not issue a new rule on federal regulatory jurisdiction over isolated wetlands.").
[41] *Rapanos*, 126 S. Ct. at 2238 (Kennedy, J. concurring).
[42] *Id.* at 2214 (plurality opinion).
[43] *Id.* at 2238 (Kennedy, J. concurring).

an indeterminate amount of water about a mile to the navigable Lake St. Clair.[44]

There was no majority opinion in *Rapanos.* While a majority voted to remand the cases back to the lower court for further review, there were divergent and contradictory rationales for what standard the lower court should apply. Justice Scalia, writing for the plurality, looked mainly to a 1954 dictionary to support his analysis.[45] His opinion stated the Act's coverage included "those relatively permanent, standing or continuously flowing bodies of water" and "*only* those wetlands with a continuous surface connection to [other regulated waters]."[46] Justice Scalia included a footnote stating he does not necessarily mean to "exclude seasonal rivers" or waters "that might dry up in extraordinary circumstances, such as drought."[47] A recent case has indicated that seasonal can be reasonably interpreted based on geographic location.[48] ***Importantly, Justice Scalia's test and rationale for narrowing Clean Water Act jurisdiction was rejected by a majority of the Court.***

Justice Stevens, writing for a four-member dissent, deferred to the Corps' current categorical regulation of all tributaries and their adjacent wetlands.[49] He found:

[T]he Corps has concluded that [wetlands adjacent to other waters, including non-navigable tributaries] play important roles in maintaining the quality of their adjacent waters, and consequently in the waters downstream. . . . Given that wetlands serve these important water quality roles and given the ambiguity inherent in the phrase "waters of the United States," the Corps has reasonably interpreted its jurisdiction to cover non-isolated wetlands [such as those at issue in *Rapanos* and *Carabell*].[50]

Justice Kennedy, in a solo concurring opinion, largely agreed with Justice Stevens that broad protection under the Act is warranted.[51] He also rejected the plurality's jurisdictional test as being "without support in the language and purposes of the Act or in our cases interpreting it."[52] Yet, Justice Kennedy found that to support jurisdiction for wetlands adjacent to certain non-navigable tributaries, a showing needed to be made that such waters have a "significant nexus" to traditionally navigable waters for jurisdiction to attach.[53] According to Justice Kennedy:

[W]etlands possess the requisite nexus, and thus come within the statutory phrase "navigable waters," if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered

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[44] *Id*. at 2239.
[45] *Id*. at 2220-21 (plurality opinion).
[46] *Id*. at 2225, 2226 (emphasis in original).
[47] *Id*. at 2221 n.5 (emphasis omitted).
[48] *See United States v. Vierstra*, 2011 WL 1064426, *4 (D. Id. 2011) (stating that "common sense and common usage forged in the Intermountain West and applied to the Government's evidence would support a finding that the Low Line Canal is 'relatively permanent'"), *affirmed* 2012 WL 3269211 (9th Cir. Aug. 13, 2012).
[49] *Rapanos, 126 S. Ct.* at 2252, 2265 (Stevens, J., dissenting).
[50] *Id*. at 2257 (citations omitted). Justice Stevens goes on to say that, "I think it clear that wetlands adjacent to tributaries of navigable waters generally have a 'significant nexus' with the traditionally navigable waters downstream." *Id*. at 2264.
[51] *Id*. at 2241 (Kennedy J., concurring).
[52] *Id*. at 2242.
[53] *Id*. at 2249.

waters more readily understood as "navigable." When, in contrast, wetlands' effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term "navigable waters."[54]

The dissent stated Justice Kennedy's test "will probably not do much to diminish the number of wetlands covered by the Act in the long run."[55] An examination of the test helps explain why the dissent reached this conclusion. First, it is important to note how utterly Justice Kennedy rejects the plurality's restrictive test, which is largely unconcerned with the water quality goals of the Act. Justice Kennedy accuses the plurality of being "unduly dismissive" of the interests put forth by the government.[56] Unlike the plurality, who see little value in protecting ephemeral waters, dry arroyos, and wet meadows (waters that the plurality characterizes in part as "puddles"),57 Justice Kennedy understands that many of these waters warrant protection.58 He notes at length that nowhere in the Act is there support for a jurisdictional distinction between waters with continuous flow and waters with intermittent flow.59 Similarly, he notes that the Act, case law precedent, and ecology fail to support the plurality's insistence on a continuous surface connection between wetlands and nearby water bodies.60 Justice Kennedy explains that wetlands perform important ecological functions, such as pollutant filtering and flood retention and "it may be the *absence* of an interchange of waters prior to the dredge and fill activity that makes protection of the wetlands critical to the statutory scheme."61

Importantly, in recognition of the vital ecological functions wetlands perform, Justice Kennedy wrote that wetlands that either individually or collectively impact "the chemical, physical or biological integrity"[62] of other navigable waters have the requisite "significant nexus" to be regulated under the Clean Water Act.[63] The ecological functions identified by Justice Kennedy include flood retention, pollutant trapping, and filtration.[64] Justice Kennedy recognized wetlands often perform these important ecological functions even though they may be intermittent or ephemeral, or lack a surface connection to other waters.[65] Justice Kennedy's test allows for the aggregation of impacts of similarly situated wetlands, meaning individually less significant wetlands may be protected if they become significant when viewed collectively within a region. Subsequent case law has indicated that this term can be interpreted broadly.[66]

Justice Kennedy also indicated a significant nexus to navigable waters can be assumed for

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[54] *Id*. at 2248.
[55] *Id*. at 2264 (Stevens, J., dissenting).
[56] *Id.* at 2246 (Kennedy, J., concurring).
[57]. *Id.* at 2221 (plurality opinion).
[58]. *Id.* at 2244 (Kennedy, J., concurring).
[59]. *Id.* at 2242-43.
[60]. *Id.* at 2244.
[61]. *Id.* at 2245-46 (emphasis added).
[62]. 33 U.S.C. § 1251(a).
[63]. *Rapanos*, 126 S. Ct. at 2248.
[64]. *Id*. at 2248.
[65]. *Id*. at 2242-46.
[66] *See Precon Development Corp. v United States Army Corps of Engineers*, 633 F.3d 278, 292 (4th Cir. 2011) ("[W]e recognize that Justice Kennedy's instruction – that 'similarly situated lands in the region' can be evaluated together – is a broad one, open for considerable interpretation and requiring some ecological expertise to administer").

certain categories of wetlands. For instance, he stated that "[a]s applied to wetlands adjacent to navigable-in-fact waters, the Corps' conclusive standard for jurisdiction rests upon a reasonable inference of ecological interconnection, and the assertion of jurisdiction for those wetlands is sustainable under the Act by showing adjacency alone."[67] Therefore, wetlands adjacent to traditionally navigable waters (TNWs) are categorically covered under Justice Kennedy's analysis, and a case-by-case determination is not needed. [68] Likewise, Justice Kennedy suggested wetlands next to certain major tributaries may also be categorically covered by the CWA.[69] It is only in regards to wetlands adjacent to minor tributaries that Justice Kennedy refuses to allow categorical assertion of jurisdiction under the current regulations.[70] Justice Kennedy also accepts as "reasonable" the Corps current definition of adjacent, which includes wetlands that may be separated from other waters by dikes, berms, and other natural or manmade barriers.[71]

Justice Kennedy does not assert categorical regulation of tributaries is no longer permissible, or a case-by-case determination of a "significant nexus" to traditionally navigable waters is required to regulate any tributary.72 On the contrary, he suggests the current definition of tributary "may well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters to constitute 'navigable waters' under the Act."73 As to tributaries, Justice Kennedy only expresses concern about categorically extending jurisdiction to all *wetlands* that are adjacent to any waters that meet the regulatory definition of tributaries. Specifically, he writes:

> [T]he breadth of this standard – which seems to leave wide room for the regulation of drains, ditches, and streams remote from any navigable-in-fact waters and carrying only minor water volumes towards it – precludes its adoption as the determinative measure of whether wetlands are likely to play an important role in the integrity of an aquatic system comprising navigable waters as

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[67] *Rapanos*, 126 S. Ct. at 2249. Justice Kennedy reiterates "[w]hen the Corps seeks to regulate wetlands adjacent to navigable-in-fact waters, it may rely on adjacency to establish its jurisdiction."

[68] This has been confirmed by multiple lower court decisions interpreting *Rapanos*. *See United States v. Cundiff*, 555 F.3d 200, 207 (6th Cir. 2009) (finding that under Justice Kennedy's opinion assertion of jurisdiction over wetlands adjacent to navigable-in-fact waters may be met 'by showing adjacency alone); *Northern California River Watch v. Healdsburg*, 496 F.3d 993, 1000 (9th Cir. 2007) (finding same); *United States v. Bailey*, 571 F.3d 791, 799 (8th Cir. 2007) (finding same).

[69] *Id*. at 2248 ("[I]t may well be the case that *Riverside Bayview's* reasoning – supporting jurisdiction without any inquiry beyond adjacency – could apply equally to wetlands adjacent to certain major tributaries.").

[70] *Id*. at 2249 ("Absent more specific regulations, . . . the Corps must establish a significant nexus on a case-by-case basis when it seeks to regulate wetlands based on adjacency to nonnavigable tributaries.").

[71] *Id*. at 2245.

[72] Justice Kennedy's opinion limited his basis for remand to the lower court to the question of "whether the specific wetlands at issue possess a significant nexus with navigable waters." 126 S. Ct. 2252. This contrasts with the plurality's broader basis for remand to determine "whether the ditches and drains near wetlands are 'waters,'" and "whether the wetlands in question" are also jurisdictional. *Id*. at 2235. This contrast is further indication Justice Kennedy may not require a case-by-case significant nexus determination for tributaries. Indeed, as the Federal District Court for the District of Idaho recently noted, "It is an open question as to whether Justice Kennedy's concurrence applies in the tributary context." *United States v. Mike Vierstra*, 2011 WL 1064526, *5 (D. Id. 2011), *affirmed* 2012 WL 3269211 (9th Cir. Aug. 13, 2012).

[73] *Id*. at 2249. Justice Kennedy never calls into question the significance of major tributaries to traditionally navigable waters.

traditionally understood.[74]

The dissent would support jurisdiction in every instance where Justice Kennedy and the plurality would.[75]

Federal appeals courts have grappled with which test or tests to apply. However, no appeals court has found that only the plurality test applies. The First, Third, and Eighth Circuits have ruled that jurisdiction can be established under either Justice Kennedy's or the plurality's test.76 The Seventh and the Ninth Circuits found that Justice Kennedy's opinion applied in the case at hand, but did not preclude the use of the plurality opinion to assert jurisdiction in other instances.77 The Fifth and Sixth Circuits declined to choose a controlling test because the waters at issue satisfied both tests.[78] The Eleventh Circuit has found that *Rapanos* precludes the government from asserting jurisdiction based on the plurality test and can only do so based on Justice Kennedy's test.[79] The Fourth Circuit has applied whichever test the parties have agreed is controlling.[80]

The proposed rule closely tracks the Kennedy significant nexus test and, when finalized, should provide a clear, legally and scientifically sound jurisdictional standard for judicial review that should significantly reduce and streamline litigation with respect to whether water bodies are – or are not – waters of the United States subject to the Clean Water Act.

III. There Is a Strong Scientific Foundation for the Proposed Definition of "Waters of the United States"

A. Kennedy's Significant Nexus Test Calls for More than Speculative or Insubstantial Scientific Evidence of Connectivity to Downstream Waters.

When the Supreme Court considered the policy question of which waters were "waters of the U.S.," Justice Kennedy, author of the pivotal concurring opinion in *Rapanos*, was clearly asking for the scientific evidence of connectivity to inform the Court's line-drawing, consistent with the goals of the Clean Water Act. Several justices recognized the important functions and

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[74] *Id*.

[75] *Id*. at 2265 ("Given that all four Justices who have joined this opinion would uphold the Corps' jurisdiction in both of these cases – and in all other cases in which either the plurality's or Justice Kennedy's test is satisfied – on remand each of the judgments should be reinstated if *either* of those tests is met.") (emphasis in original).

[76] *United States v. Johnson*, 467 F.3d 56, 65-66 (1st Cir. 2006), *cert. denied*, 552 U.S. 948 (2007); *U.S. v. Donovan*, 661 F. 3d 174, 176 (3rd Cir. 2011); *United States v. Bailey*, 571 F.3d 791, 798-99 (8th Cir. 2009);

[77] *N. Cal. River Watch v. City of Healdsburg*, 496 F.3d 993, 999 (9th Cir. 2007), *cert denied*, 552 U.S. 1180 (2008); *United States v Gerke Excavating, Inc.*, 464 F.3d 723, 724-25 (7th Cir 2006), *cert. denied*, 552 U. S. 810 (2007); *see also N. Cal. River Watch v. Wilcox*, 633 F.3d 766, 769 (9th Cir. 2010), amended 2011 (finding that "[i]n *City of Healdsburg* … the court found that Justice Kennedy's concurrence in *Rapanos* 'provides the controlling rule of law for our [c]ase.' We did not, however, foreclose the argument that Clean Water Act jurisdiction may also be established under the plurality's standard.").

[78] *United States v. Lucas*, 516 F.3d 316, 326-27 (5th Cir. 2008) *cert denied*, 555 U.S. 822 (2008); *United States v. Cundiff*, 555 F.3d 200, 210-213 (6th Cir. 2009), *cert denied*, 558 U.S. 818 (2009).

[79] *United States v. Robison et al.*, 505 F.3d 1208, 1219-23 (11th Cir. 2007), *cert denied sub nom United States v. McWane*, 555 U.S. 1045 (2008).

[80] *Precon Development Corp. v United States Army Corps of Engineers*, 633 F.3d 278 (4th Cir. 2011) (parties agreed Kennedy test governs).

connections of wetlands in a watershed context, but Justice Kennedy wanted more specific evidence of how these wetlands affect downstream waters.

The agencies' finding that all tributaries have a significant nexus to TNWs, IWs, or territorial seas is fully consistent with and relevant to Justice Kennedy's significant nexus test. Justice Kennedy suggests the current definition of tributary "may well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters to constitute 'navigable waters' under the Act." *Rapanos* at 2249. As to tributaries, Justice Kennedy only expresses concern about categorically extending jurisdiction, without more supporting evidence, to all *wetlands* that are adjacent to *any* waters that meet the regulatory definition of tributaries. *Id.*

The scientific evidence of connectivity (or isolation) and wetland and stream functions is essential in applying Justice Kennedy's significant nexus test. Justice Kennedy explains that wetlands perform important ecological functions, such as pollutant filtering and flood retention and "it may be the *absence* of an interchange of waters prior to the dredge and fill activity that makes protection of the wetlands critical to the statutory scheme." *Rapanos* at 2245-46 (emphasis added).

Understanding the scientific evidence of connectivity and effects in the aggregate and in a watershed context is central to the application of Justice Kennedy's significant nexus test which calls for evaluation of wetlands connectivity and effects downstream "either alone or in combination with similarly situated lands in the region."

B. EPA has compiled a rigorous, accurate, and comprehensive science synthesis that supports categorical findings of significant nexus for the entire tributary system, adjacent waters, and several categories of non-floodplain "other waters."

During 2011-2012, the EPA Office of Research and Development compiled a draft science report, *The Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence.*[81] This scientific report, based on peer-reviewed literature and an additional review by independent scientists, brings together the scientific evidence of connectivity and effect to inform the Administration's rulemaking clarifying which waters are protected under the Clean Water Act.

In July 2013, the EPA Science Advisory Board (SAB) launched an SAB Expert Scientific Peer Review of the Connectivity Report. In September 2013, the Administration released its Draft Connectivity of Streams and Wetlands Science Report for public comment. The Draft Connectivity Report included, among others, the following findings:

- Streams and wetlands "fundamentally affect river structure and function by altering transport of various types of materials to the river." *Connectivity Report* at 1-4.

- These altering effects depend on "two key factors: (1) connectivity (or isolation) between streams, wetlands, and rivers that enables (or prevents) the movement of materials

[81] *See supra* note 19.

between the system components; and (2) functions within streams and wetlands that supply, remove, transform, provide refuge for, or delay transport of materials." *Connectivity Report* at 1-4.

- The conceptual framework correctly adopts two important principles for assessing connectivity and effects to downstream waters: 1) identification of the watershed as the appropriate scale to assess connectivity and effects; and 2) recognition that to understand connectivity and effects downstream, "the effects of small water bodies in a watershed need to be considered in aggregate." *Connectivity Report* at 1-14.

- The Connectivity Report thoroughly documents and supports its conclusion that "[a]ll tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers via channels and associated alluvial deposits where water and other materials are concentrated, mixed, transformed, and transported." *Connectivity Report* at 1-3. The report includes a thorough examination of the literature with respect to ephemeral stream connectivity, particularly in the arid southwest.

- The scientific evidence supports the report's conclusion with respect to floodplain wetlands and open-waters that: "[w]etlands and open-waters in landscape settings that have bidirectional hydrologic exchanges with streams or rivers (e.g., wetlands and open-waters in riparian areas and floodplains) are physically, chemically, and biologically connected with rivers" through multiple processes, and that they "serve an important role in the integrity of downstream waters because they also act as sinks by retaining floodwaters, sediment, nutrients, and contaminants that could otherwise negatively impact the condition or function of downstream waters." *Connectivity Report* at 1-3.

- The scientific evidence also demonstrates that shallow groundwater connections serve as hydrologic connections between surface waters and should be considered in assessing connectivity and effects on downstream waters. *Connectivity Report* at 1-7 to 1-14.

- The draft report compiles compelling scientific evidence supporting the conclusion that "uni-directional" wetlands and open-waters located outside of floodplains (e.g., many prairie potholes, vernal pools, and playa lakes) "provide numerous functions that can benefit downstream water quality and integrity" and "affect the condition of downstream waters if a surface or shallow subsurface water connection to the river network is present." *Connectivity Report* at 1-3-4.

- However, the draft report concludes that [t]he literature we reviewed does not provide sufficient information to evaluate or generalize about the degree of connectivity (absolute or relative) or the downstream effects of wetlands in unidirectional landscape settings." *Connectivity Report* at 1-10 to 1-11.

The Peer Review Panel met and held public meetings to discuss the draft report in December 2013. The Panel drafted and revised its peer review report through the summer of 2014, wrapping up its peer review in September 2014. Building on the Connectivity Report and the

Peer Review Panel deliberations, the agencies' included in the proposed rule preamble a thorough discussion of the science supporting the rule, including a lengthy Scientific Evidence Appendix A, at 79 Fed. Reg. 22222-22252.

On September 30, 2014, the SAB signed and posted its letter confirming the adequacy of the scientific basis for key components of the proposed rule. The SAB Rule Report[82] finds:

- There is strong scientific evidence to support the EPA's proposal to include all tributaries within the jurisdiction of the Clean Water Act.

- If anything, the use of the ordinary high water mark as part of the definition of tributary might be too restrictive.

- The available science supports the EPA's proposal to include adjacent waters and wetlands as waters of the United States. This is because adjacent waters and wetlands have a strong influence on the physical, chemical, and biological integrity of navigable waters.

- Adjacent waters and wetlands should not be defined solely on the basis of geographical proximity or distance to jurisdictional waters.

- There is adequate scientific evidence to support a determination that certain subcategories and types of 'other waters' in particular regions of the United States (e.g., Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, western vernal pools) are similarly situated (i.e., they have a similar influence on the physical, biological, and chemical integrity of downstream waters and are similarly situated on the landscape) and thus are waters of the United States.

- As the science continues to develop, other sets of wetlands may be identified as "similarly situated."

- The existing science does not support "*excluding* groups of 'other waters' or subcategories thereof" at this juncture.

- There are concerns with excluding various features from being considered waters of the U.S., including groundwater, certain ditches (it notes there is a lack of scientific knowledge to help discriminate between ditches that should be excluded or included), various artificial features, gullies, rills, and non-wetland swales.

On October 17, 2014, the SAB issued its Final Connectivity Peer Review Report on EPA's Connectivity Report.[83] This SAB Connectivity Peer Review Report is the culmination of many months of public review and revisions by a panel of more than 20 wetland and stream science experts.

[82] *See* note 22, *supra.*
[83] *See* note 23, *supra.*

Key Findings from the Final Connectivity Peer Review Report include the following:

- Relatively low levels of connectivity can be meaningful in terms of impacts on the chemical, physical, and biological integrity of downstream waters." Report at 2.

- Strong scientific support has been provided for the overall conclusion and related findings that ephemeral, intermittent, and perennial streams "exert a strong influence on the character and functioning of downstream waters, and indeed that all tributary streams are physically, chemically, and biologically connected to downstream waters." Report at 3.

- There is strong scientific support for the overall conclusion that "bidirectional" wetlands and waters in floodplain settings are physically, chemically, and biologically connected with rivers through multiple pathways. Additional literature could be included in the Report to bolster this conclusion and related findings. Report at 5.

- The SAB Peer Review Report disagrees with the overall conclusion that "[t]he literature reviewed does not provide sufficient information to evaluate or generalize about the degree of connectivity (absolute or relative) or the downstream effects of wetlands in non-floodplain settings." Report at 6.

- "The scientific literature provides ample information to support a more definitive statement (i.e., numerous functions of non-floodplain waters and wetlands have been shown to benefit the physical, chemical, and biological integrity of downgradient waters). *Id.*

- The SAB recommends that the EPA revise the conclusion to focus on what is supported by the scientific literature and articulate the specific knowledge gaps that must be resolved (e.g., degree of connectivity, analyses of temporal or spatial variability). *Id.*

- "The SAB also recommends that the Report explicitly discuss the pathways by which non-floodplain waters and wetlands can be connected to downstream waters and state that the evaluation of connectivity should be based on the frequency, magnitude, duration, predictability, and consequences of water, material, and biotic fluxes to downstream waters and their impact on the physical, chemical and/or biological integrity of those waters." *Id.*

- The key findings concerning non-floodplain waters and wetlands "should address: the biological functions and biological connectivity of non-floodplain wetlands; differences between natural and manmade wetlands; the importance and temporal dynamics of spatial proximity as a determinant of connectivity; and the importance of cumulative or aggregate impacts of non-floodplain wetlands." *Id.*

The Connectivity Report's compilation and synthesis of over 1,000 peer reviewed scientific articles, the SAB Peer Review Panel deliberations, the Science Evidence Appendix A in the

proposed rule preamble, and all of the scientific evidence submitted to the administrative record for this rulemaking provide a solid scientific foundation that supports categorical findings of significant nexus for the entire tributary system, adjacent waters, and several categories of non-floodplain "other waters."

IV. The Overall Approach to the Proposed Rule Increases Clarity and Consistency with the Clean Water Act, the science, and the legal precedent.

First, we support the agencies' application of the jurisdictional definition of "waters of the United States" to all of the Clean Water Act programs, just as Congress did when it passed the 1972 Clean Water Act. There is no jurisdictional distinction between different programs of the Act.[84] The Act simply does not allow a water body to be jurisdictional if one type of activity is at issue, but not jurisdictional if another type of activity is at issue.[85] Thus, if a water body is not jurisdictional for purposes of the section 404 permit program, it is not jurisdictional for the Section 301 prohibition on the discharges of pollutants, the Section 402 NPDES program, Section 303 water quality standards, Section 311 oil spill regulations, or any other Clean Water Act program that limits its jurisdiction to "navigable waters." The scope of jurisdiction also affects when states are able to certify whether federal permits are in compliance with state water quality standards under Section 401 of the Act. Consequently, we strongly support the agencies decision to apply the Proposed Rule to all of these CWA programs.

[84] *Id.* § 1362(7).

[85] While the 2008 Guidance purported to be limited to CWA § 404, even then the Corps acknowledged this in a Questions & Answers posting related to the *Rapanos* decision and the 2007-08 Guidance, stating, "While the *Rapanos* case involved the CWA § 404 permitting program for discharged of dredged or fill material, the decision has implications for all CWA programs, such as § 402 National Pollutant Discharge Elimination System (NPDES) permits, § 311 oil spill prevention and cleanup, and § 303 water quality standards." Questions & Answers for the *Rapanos* and *Carabell* Decision at 67.

We also support the agencies' decision to retain much of the structure and text of the agencies' longstanding definition of "waters of the United States" where revisions are not warranted. We agree that continuity with the existing regulations, where possible, will minimize confusion and reduce transaction costs for the regulated community and the agencies. 79 Fed. Reg. at 22198. To that end, we support the agencies' decision to retain without change the existing related definitions of "wetlands," "adjacent," and "ordinary high water mark," and the following provisions within the definition of "waters of the United States": Traditionally navigable waters, interstate waters, the territorial seas, and impoundments of "waters of the United States." 79 Fed. Reg. at 22198-99.

In addition, we support the agencies' decision to clarify the current definition's longstanding provisions for tributaries and adjacent wetlands by: 1) defining tributary for the first time; 2) clarifying that adjacent water bodies in addition to adjacent wetlands are – and always have been -- jurisdictional by rule; and 3) retaining the existing definition of "adjacent," but defining for the first time the "neighboring" aspect of adjacency, as well as the related "riparian" and "floodplain" terms.

While we recognize the need to revise the current, very broad "all other waters" provision in light of the *SWANCC* Supreme Court decision, we do not agree with the agencies' proposal to severely limit the "other waters" provision by imposing a case specific significant nexus requirement for all non-floodplain, non-adjacent "other waters." As explained more fully below, we do not believe that this proposal is consistent with the Clean Water Act, judicial precedent, or the scientific evidence of connectivity with respect to these waters.

In addition, we support the overall decision to include a new section (b) excluding specific waters from the definition of "waters of the United States." Importantly, we do have concerns with the breadth and vagueness of both the waste treatment system exclusion and the prior converted cropland exclusion. Both of these exclusions have created significant loopholes leading to inconsistencies in application and the destruction of ecologically important water bodies. However, it is our view that revisions to these two existing exclusions warrant special attention is separate rulemakings.

We recognize the need to clearly exclude certain ditches and other water features that are excavated from dry land and that do not contribute flow to downstream waters. However, we strongly urge the agencies to finalize a "waters of the U.S." rule that protects our existing headwaters, streams, ponds, and wetlands from pollution, drainage and channelization associated with ditches and mechanized ditching activity.

V. The Proposed Rule Definition of Traditional Navigable Waters is Well-Supported by Statute and Case Law.

The proposed rule properly retains the existing regulatory language defining and interpreting traditional navigable waters (TNWs) as: [a]ll waters which are currently used, or were used in the past, or may be susceptible of use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide." *See e.g.,* 33 C.F.R. 328.3 (a)(1). The

Agencies' proposed rule and interpretation regarding TNWs is well-supported by pre-Clean Water Act navigability case law and statutes, is consistent with existing regulations and with the current 2008 Guidance on TNWs, and helps restore protections for wetlands, lakes, and streams nationwide.

A. TNWs include waters currently used, used in the past, or susceptible of use in interstate commerce.

Case law makes clear that TNWs include waters that can be navigated by water craft, waters that are currently used as highways in interstate commerce, waters susceptible to such use, and waters that were historically so used, even if they are not currently so used.[86] These include waters that may have areas difficult to navigate.87 These also include certain intrastate waters.88 Moreover, navigation need not be commercial in nature, but can be recreational or small craft navigation.[89]

There are three lines of cases that comprise the foundation for TNWs—1) Commerce Clause cases, including commerce, [90] Rivers and Harbors Act, [91] Federal Power Act, [92] and navigational servitude cases; [93] 2) Admiralty cases, [94] and 3) Equal Footing Clause cases. [95] All of these lines

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[86] *See, e.g., United States v. Holt State Bank*, 270 U.S. 49, 56 (1926) (waters "are navigable in fact when they are used, or are susceptible of being used, in their natural and ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water; and further that navigability does not depend on the particular mode in which such use is or may be had-whether by steamboats, sailing vessels or flatboats-nor on an absence of occasional difficulties in navigation, but on the fact, if it be a fact, that the stream in its natural and ordinary condition affords a channel for useful commerce"); *U.S. v. Appalachian Elec. Power Co.*, 311 U.S. 377, 408 (1940) ("When once found to be navigable, a waterway remains so.").

[87] *See Appalachian Elec. Power Co.*, 311 U.S. at 408 (navigability can exist despite "the necessity for reasonable improvements to make an interstate waterway available for traffic").

[88] *Utah v. United States*, 403 U.S. 9 (1971).

[89] *See Appalachian Elec. Power Co.*, 311 U.S. at 416 ("Nor is the lack of commercial traffic a bar to a conclusion of navigability where personal or private use by boats demonstrates the availability of the streams for similar types of commercial navigation."); *FPL Energy Marine Hydro LLC v. FERC*, 287 F.3d 1151, 1157-59 (D.C. Cir. 2002) (upholding navigation based on three canoe trips taken to demonstrate navigability); *Alaska v. Ahtna*, 891 F.2d 1404, 1405 (9th Cir. 1989) (use of river for commercial recreational boating sufficient to show navigability).

[90] *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 190 (1824); *The Daniel Ball,* 77 U.S. 557 (1870); *United States v. Steamer Montello (The Montello),* 87 U.S. (20 Wall.) 430 (1874).

[91] *Economy Light & Power Co. v. United States*, 256 U.S. 113 (1921). The Corps' RHA regulatory definition is based on such cases as *The Daniel Ball, The Montello*, and *Economy Light & Power*, as well as such cases as *United States v. Utah,* 283 U.S. 64 (1931) and and *United States v. Appalachian Electric Power Co.,* 311 U.S. 377 (1940).

[92] United States v. Appalachian Elec. Power Co., 311 U.S. 377, 407-08 (1940). In *Appalachian Electric Power*, the Court ruled, inter alia, that: "[W]hen once found to be navigable, a waterway remains so." *Id.* at 408.

[93] The navigational servitude extends from the "ordinary high water mark" on one bank of a navigable water of the United States to the ordinary high watermark on the other bank. A water body's ordinary high watermark is the "line of the shore established by the fluctuations of water . . . ." 33 C.F.R. §329.11(a). It is determined by "physical characteristics such as a clear, natural line impressed on the bank, . . . changes in the character of the soil; destruction of terrestrial vegetation; . . . or other appropriate means that consider the characteristics of the surrounding areas." *Id. See e.g.,* Normal Parm Jr. et al. v. Mark Shumate, 513 F.3d 135, 143 (5th Cir. 2007); United States v. Rands, 389 U.S. 121, 123 (1967).

[94] *Price v. Price*, 929 F.2d 131, 134 (1991).

of cases involve TNWs and all of these cases can and should be used to support a determination that a water is a TNW.

The statutes, federal case law, and regulatory policy noted above support the Agencies' rule interpretation that waters will be considered TNWs if:

- They are subject to section 9 or 10 of the Rivers and Harbors Act of 1899; *or*
- A federal court has found the water body to be navigable-in-fact; *or*
- They are waters currently in use for commercial navigation, including commercial waterborne recreation; *or*
- They have historically been used for such commercial navigation; *or*
- They are susceptible to being used in the future for such commercial navigation.

[95] *Idaho et al. v. Coeur D'Alene Tribe of Idaho et al*., 521 U.S. 261 (1996); *United States v. Utah*, 283 U.S. 64, 76 (1931) (*citing United States v. Holt State Bank*, 270 U.S. 49, 56 (1926)).

See 79 Fed. Reg. 22200.

B. Susceptibility for future use may properly be based on capacity for use and future use for waterborne recreation.

Susceptibility for future use may be based on such factors as physical characteristics and capacity for commercial navigation, including commercial waterborne recreation and potential future use for these purposes. The case law cited herein and in the Proposed Rule preamble supports the agencies' interpretation that potential future use for such purposes "can be demonstrated by current boating or canoe trips for recreation or other purposes." Proposed Rule Preamble at 22200 and 22253 *citing FPL Energy Marine Hydro L.L.C. v. FERC,* 287 F. 3d 1151, 1157 (D.C. Cir. 2002) and *Alaska v. Ahtna, Inc*., 891 F. 2d 1401, 1405 (9th Cir. 1989).

Waterborne recreational trips are appropriately considered in determining whether a water body is a TNW. As the proposed rule preamble notes, on many rivers the only commerce that will occur in the future is recreational use by paddlers in canoes, kayaks, and rafts. Based on the case law, the question to be asked in determining TNW status is whether this water body ever could be used for commercial recreational boating. If a boating trip can establish that the water is or could be made navigable for small water craft, then the water should be classified a TNW. 79 Fed. Reg. at 22200, 22253.

The July 2010 EPA Los Angeles River TNW determination demonstrates that the TNW definition in the Proposed Rule is no more expansive than the 2008 TNW definition.[96] Although the determination looked at the current commercial uses of the river, as well as the historic uses of the river, an expedition of kayakers and canoeists down the Los Angeles River played a prominent role in convincing EPA that the river was a TNW. If the EPA were to conduct a similar analysis under the Proposed Rule, it is quite likely that it would reach the same result, albeit with considerably less confusion, delay, and resources having clarified, consistent with the case law, that a trip taken for the purpose of demonstrating a water body can be navigated is sufficient.

C. The final rule regarding TNWs could be improved by further clarifying the TNW case law and improving available TNW mapping data.

The TNW definition and its interpretation are key to determining CWA jurisdiction since Justice Kennedy's *Rapanos* opinion uses TNWs as a primary reference point for determining significant nexus and therefore CWA jurisdiction. Any failure to properly identify the nearest TNW could mean a significant nexus analysis is improperly conducted by using a water body that is further away than the nearest water that could be deemed traditionally navigable – and where the significant nexus between the waters may be less apparent and more difficult to prove.

Consider an example in which EPA or Corps staff is trying to determine whether a non-adjacent wetland has a significant nexus to a TNW. Two miles down gradient from where the wetland

[96] Special Case Evaluation Regarding Status of the Los Angeles River, California, as a Traditionally Navigable Water, EPA Region 9 (July 1, 2010).

sits, there is a creek that can be canoed today, and that records show was used 100 years ago by fur trappers. The next downstream water is a major river, but it is more than 20 miles away.[97] Clearly, it would be easier to show that the wetland (perhaps in combination with similarly situated wetlands in the region) had a physical, biological, or chemical linkage – a "significant nexus" – to the creek, as compared to proving the requisite nexus between the wetland and the river 20 miles away. While the wetland may very well have similar impacts on the more distant river, that nexus "might be more difficult to demonstrate and more subtle."[98]

If, for instance, a water is found to have supported "historic commerce," that is all that is necessary to find that the water is a TNW, even if that commerce only involved a trapper using the creek to get his beaver pelts to market. The "susceptible to being used for future commercial navigation" test need only be applied if there is no evidence of historic commerce. And while a "susceptibility" determination may involve an inquiry into the size, depth, and flow velocity of a creek, that same inquiry has no place in a determination of the presence or absence of evidence of historic commerce.

In many cases the Corps will turn to the navigability studies that it has completed under the Rivers and Harbors Act (RHA). However, these studies are often outdated. For example, one such study in Georgia set the head of navigation 70 miles downstream of where it should be, because the author of the report did not apply the historic commerce test. The section of river at issue had been in commercial use well into the 1900's. Thus, this already small subset of TNWs is, in some regions, smaller than it should be. Western Resource Advocates reports, for example, that historically, the Corps had determined that, of Colorado's approximately 100,000 miles of stream, *only 15 miles* (on the main stem Colorado River from Grand Junction to the state line) were TNW.[99] Excessive reliance on Corps district RHA Section 10 waters for TNW determinations would lead to missing many TNWs and, as a result, likely leaving many wetlands, lakes, and ponds without Clean Water Act protection, or would increase the time, cost and effort involved in establishing a basis for CWA protection.

To address these concerns, we join Southern Environmental Law Center (SELC)[100] in recommending the following:

1. The agencies should include a section in the preamble expanding on the one in the proposed rule at 79 Fed. Reg. 22200 (April 21, 2014) that explains in further detail all of the different sources of the term "traditional navigable water" and that points out that they are all equally applicable in making a significant nexus determination. The section should also explain that the nearest traditional navigable water determination should be based on the most inclusive information available.

2. The agencies should make it clear that only one prong of the traditional navigable water

[97] This hypothetical situation is largely borrowed from William W. Sapp *et al*, *The Historic Navigability Test: How to Use It to Advantage in This Post-Rapanos World*, 37 ELR 10797, 10798 (Nov. 2007).
[98] *Id.* at 10805.
[99] Western Resource Advocates 2014 Rule Comments *citing* Hill, John, "The Right to Float in Colorado: Differing Perspectives," 26 Colorado Water 18 (Colorado Water Institute 2009).
[100] *See* SELC 2014 Rule Comments.

test is needed to qualify a water as a traditional navigable water, i.e., the historic commerce test is enough on its own.

3. The agencies should make it clear in the preamble that the Corps' navigability reports hold no more sway than any other navigability test.

4. The preamble should also explain that the Corps must consider any information in making traditional navigable determinations, such as information on historic commerce, introduced by the third parties during a permit process. And that if the Corps judges that third-party information to be legitimate, it cannot be trumped by, for example, a Corps navigability report.

5. In addition to including this information in the preamble, the Corps should state in the preamble that it will be issuing a regulatory guidance letter further explaining the traditional navigability test.

Finally and importantly, the agencies should establish a publicly available spatial database documenting all TNWs as the information supporting TNW status is identified. Readily accessible maps documenting TNWs will improve the efficiency, consistency, and accuracy of TNW, significant nexus, and CWA jurisdictional determinations.

VI. The Proposed Rule's Treatment of Interstate Waters is Well-Supported by Statute, Regulations, and Case Law.

A. The Clean Water Act and the agencies' existing rules provide for categorical protection of interstate waters.

The agencies' proposal to assert jurisdiction over all interstate waters (IWs), including interstate wetlands, categorically and without a case-by-case significant nexus analysis, is consistent with the CWA and its legislative history. *See* Proposed Rule Preamble at 22200 and 22254-59, *citing, e.g.*, CWA section 303(a)(1). The Senate Committee on Public Works stated, for example:

Through a narrow interpretation of the definition of *interstate waters* the implementation of the1965 Act was severely limited. Water moves in hydrologic cycles and it is essential that discharges of pollutants be controlled at the source.[101]

The agencies' definition falls squarely within their longstanding rules "defining 'waters of the United States' to include "*interstate waters including interstate wetlands*." The categorical protection of these waters pursuant to these rule provisions was not questioned or even at issue in the *Rapanos* or *SWANCC* Supreme Court decisions.

The agencies' definition of "interstate waters" also carefully tracks the *statutory* definition of "interstate waters" dating back to the 1948 water pollution law that includes "*all rivers, lakes, and other waters* that flow across, or form a part of, State boundaries." *See* Proposed Rule Preamble at 22255. Assertion of categorical jurisdiction over these waters is neither new nor an

[101] S. Rep No. 92-414 at 77 (1971) 1972 Legislative History at 1495 (emphasis added).

expansion of CWA jurisdiction. The 2008 guidance document, still in effect, inexplicably fails to mention or clarify the treatment of "interstate waters."[102]

Consider, as Western Resource Advocates comments, the headwaters states of the Rockies, where every major river system is the subject of either an interstate compact that allocates its waters or a Supreme Court of the United States decree for an equitable apportionment thereof. [103] According to WRA, the State of Colorado alone is party to nine interstate compacts (two on the Colorado River), one interstate agreement and two equitable apportionment decrees for rivers. Yet, the Corps had formally designated only one of these waterways as a TNW prior to July 2011. Most of Colorado's nearly 100,000 miles of streams are tributary to one of the rivers that is subject to a compact, agreement or decree.

B. The agencies' treatment of tributaries, adjacent wetlands, and other waters in relation to interstate waters is well-supported.

Also well-supported by law and policy is the agencies' proposal to analyze tributaries to IWs, wetlands adjacent to IWs, and other waters relative to IWs in essentially the same manner as these waters are analyzed vis-à-vis TNWs. Proposed Rule Preamble at 22200, 22258-59. Congress clearly intended to protect interstate waters and their tributaries, and understood that protecting interstate waters required limiting pollution upstream. We agree that it is reasonable to apply Justice Kennedy's significant nexus test to the tributaries, adjacent wetlands, and other waters that have demonstrated hydrological or ecological connections to IWs. As noted in the proposed rule preamble:

> Justice Kennedy's standard seeks to ensure that waters Congress intended to subject to federal jurisdiction are indeed protected, both by recognizing that waters and wetlands with a significant nexus to covered waters have important beneficial effects on those waters, and by recognizing that polluting or destroying waters with a significant nexus can harm downstream covered waters.
> *Id.* at 22200.

VII. The Agencies' Definition and Treatment of Tributaries is Scientifically and Legally Sound.

We support the agencies' proposed rule that "all waters that meet the proposed definition of tributary are "waters of the United States" by rule, unless excluded under section (b), because tributaries and the ecological functions they provide, alone or in combination with other tributaries in the watershed, significantly affect the chemical, physical, and biological integrity of traditional navigable waters, interstate waters, and territorial seas." 79 Fed. Reg. 22201.[104]

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[102] Robert Meltz and Claudia Copeland, *The Wetlands Coverage of the Clean Water Act (CWA) Is Revisited by the Supreme Court: Rapanos v. United States, at* 14. Congressional Research Service 7-57– (June 3, 2011).
[103] Western Resource Advocates 2014 Rule Comments.
[104] We remind the agencies that Justice Kennedy does not assert that categorical regulation of tributaries is no longer permissible, or that a case-by-case determination of a "significant nexus" to TNWs or IWs is required to regulate any tributary. Justice Kennedy's opinion limited his basis for remand to the lower court to the question of "whether the specific wetlands at issue possess a significant nexus with navigable waters." 126 S. Ct. 2252. This contrasts with the plurality's broader basis for remand to determine "whether the ditches and drains near wetlands are

The proposed rule is strongly supported by the draft Connectivity Report, which thoroughly documents and supports its conclusion that "[a]ll tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers via channels and associated alluvial deposits where water and other materials are concentrated, mixed, transformed, and transported." *Connectivity Report* at 1-3. The report includes a thorough examination of the literature with respect to ephemeral stream connectivity, particularly in the arid southwest.

This conclusion with regard to all tributary streams is strongly supported by the SAB Connectivity Peer Review Report as well,[105] and is fully consistent with and relevant to Justice Kennedy's significant nexus test. Justice Kennedy suggests the current definition of tributary "may well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters to constitute 'navigable waters' under the Act." *Rapanos* at 2249.

We urge the agencies to swiftly finalize this rule, clearly restoring longstanding protections for all tributary waters. Our research, as well as comments submitted by Corps officials, indicate that many lower order intermittent and ephemeral streams were left unprotected following issuance of the Guidance in 2007 and 2008, likely because of the inability to aggregate streams impacts. A Corps employee has commented that:

> [O]ur district has determined that we cannot defensibly say that most individual first order/ephemeral stream reaches have a significant effect on a TNW. EPA and the Sierra Club argue that those first order/ephemeral headwater streams should be regulated because cumulatively they greatly effect [sic] the integrity of the TNWs. We do not argue that. However, the Supreme Court ruling and the *Rapanos* guidance did not say to look at them cumulatively. Not until several first or second order streams merge into a higher order stream can we defensibly argue that a stream has a significant effect.[106]

We have also found several instances where streams, some quite sizable, are not being protected.[107] Some of these streams are being subjected to channelization and other projects that

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'waters,'" and "whether the wetlands in question" are also jurisdictional. *Id*. at 2235. This contrast is further indication Justice Kennedy may not require a case-by-case significant nexus determination for tributaries. It is only in regards to *wetlands* adjacent to minor tributaries that Justice Kennedy refuses to allow categorical assertion of jurisdiction under the current regulations. *Id*. at 2249 ("Absent more specific regulations, . . . the Corps must establish a significant nexus on a case-by-case basis when it seeks to regulate wetlands based on adjacency to nonnavigable tributaries.").

[105] *See* discussion *supra* at 22.

[106] Email from Cody Wheeler, codywheeler68@sbcglobal.net, Corps Employee, to OW-Docket@EPA (Nov. 16, 2007).

[107] *See*, *e.g.*, Approved Jurisdictional Determination Form, U.S. Army Corps of Engineers, File NWK-2007-01586-1 (Aug. 17, 2007) (no jurisdiction found for second order stream with 384 acres of drainage, estimated to be 8,000 linear feet in length with 626 acre watershed); Approved Jurisdictional Determination Form, U.S. Army Corps of Engineers, File NWK-2007-01586-2, (Aug. 17, 2007) (no jurisdiction found for a first order stream with 115 acres of drainage and a watershed size that is also 115 acres. It is estimated to be 3,800 linear feet in length); Approved

can have significant and harmful water quality and habitat implications. And failing to protect these streams leaves them vulnerable to other pollution, like the dumping of industrial and other waste that poses clear threats to downstream water quality, not to mention the tributary itself.

We urge the agencies to finalize this rule, confirming that any water that meets the definition of tributary (and is not excluded under section (b) of the proposed rule) has a significant nexus to a traditionally navigable water, interstate water, or territorial sea such that it is a 'waters of the United States' without the need for a separate, case-specific significant nexus analysis. *Id.*

A. The agencies' definition of tributary is consistent with existing law and science, and does not expand Clean Water Act jurisdiction.

The agencies' definition of "tributary" includes several clarifying elements, all of which are consistent with existing law, science, and past practice. *See* 33 CFR 328.3 (c)(5); 79 Fed. Reg. 22201-06, 22263. Fundamentally, the proposed rule defines "tributary" as:

> [A] water physically characterized by the presence of a bed and banks and ordinary high water mark, as defined at 33 CFR 328.3(e), which contributes flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (4) [traditionally navigable waters, interstate waters, territorial seas, and impoundments of these waters as well as tributaries]. *Id.*

Importantly, and consistent with the science, law, and past practice, the agencies' tributary definition clarifies specific tributary circumstances where the OHWM is not determinative of tributary status: 1) "wetlands, lakes, and ponds are tributaries (even if they lack a bed and banks or ordinary high water mark) if they contribute flow, either directly or through another waters to a water identified in paragraphs (a)(1) through (3);" and 2) a water "does not lose its status as a tributary if, for any length, there are one or more man-made breaks …, or one or more natural breaks … so long as a bed and banks and an ordinary high water mark can be identified upstream of the break." While the OHWM typically provides a strong indicator of relatively frequent flow for linear stream channels, it is not a reliable indicator of flow for non-linear water bodies such as wetlands, lakes, and ponds which none the less do contribute flow downgradient. *See* 79 Fed. Reg. at 22203; 22235.

Also consistent with the Act, the legal precedent, and the underlying connectivity science is the definition's clarification that a tributary, including a wetland, can be "natural, man-altered, or man-made" and includes "rivers, streams, lakes, ponds, impoundments, canals, and ditches not excluded in paragraph (b)(3) or (4) of this section." *Id.* There is significant case law that supports the regulation of man-made and man-altered waters as tributaries.[108]

Jurisdictional Determination Form, U.S. Army Corps of Engineers, File NWO-2007-2195-DEN (Nov. 1, 2007) (ephemeral stream flowing into a reservoir used for water supply not jurisdictional).

[108] *See, e.g, United States v. Moses*, 496 F.3d 984 (9th Cir. 2007), *cert denied*, 554 U.S. 918 (2008) (stream impacted by man-made diversion jurisdictional); *Vierstra*, *supra*, at *5 ("The fact that the Low Line Canal is man-made is of no moment. The canal is part of a tributary system connecting navigable waters upstream and downstream for six to eight months of the year. Its man-made nature makes it no less capable of carrying pollution to navigable and interstate waters. Moreover, there are many water-ways in the Intermountain West that have been re-routed, re-countered, and re-channeled in an effort to control, store, and use the limited water we have. Excluding these water-

1. *The agencies' use of the existing OHWM definition helps clarify the definition of tributary and tributary boundaries.*

The tributary definition also provides constructive and consistent clarification by incorporating and explaining the Corps' longstanding Ordinary High Water Mark (OHWM) as an indicator of channel boundaries. We support the agencies' use of the existing Corps definition of OHWM:

> The term "ordinary high water mark" means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.
> 33 CFR 328.3(e).

The proposed rule preamble explains that the bed and banks and OHWM requirement is important because "these features generally are physical indicators of flow" and thus indicative of "a tributary's ability to transport pollutants to downstream traditionally navigable waters, interstate waters, and the territorial seas, and thereby have a significant effect on the chemical, physical, and biological integrity of a water identified in paragraphs (a)(1) through (a)(4)." See 79 Fed. Reg. at 22202. Importantly, the preamble notes that these bed and banks and OHWM indicators of flow "can be created by ephemeral, intermittent, and perennial flows." *Id.*

As the agencies explain, the OHWM "generally defines the lateral limits of a water, and its absence generally determines whether a tributary's channel such that the upper limit of the jurisdictional tributary is identified. However, as noted above, we strongly support the agencies' recognition that channel characteristics are variable and those variations must be taken into account in evaluating the presence and continuity of the channel bed and bank and OHWM.

2. Any further clarifications of the tributary definition must respect connectivity science and the goals of the Clean Water Act, and must not exclude wetlands, lakes, and ponds that function as tributaries and are integral elements of the tributary system.

We recognize that the agencies are being asked to further clarify and define the OHWM and bed and banks terms in order to provide more consistency and certainty in identifying tributaries in the field. At the same time, the SAB is cautioning the agencies to recognize that channel characteristics are variable and those variations must be taken into account in evaluating the presence and continuity of the channel bed and bank and OHWM. Indeed, the SAB is urging

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ways from the jurisdiction of the CWA when they might otherwise constitute tributaries of navigable waters makes little practical sense."); *see also*, *United States v. Gerke Excavating, Inc.*, 412 F.3d 804, 805-06 (7th Cir. 2005), *vacated and remanded* 548 U.S. 901 (2006) (ordering further consideration in light of *Rapanos*), *remanded* 464 F.3d 723, 725 (7th Cir. 2006) (remanding to district court for further fact finding to determine whether particular wetlands were jurisdictional "waters of the United States" under Justice Kennedy's significant nexus test). (Finding that, "A stream can be a tributary; why not a ditch? A ditch can carry as much water as a stream, or more; many streams are tiny. It wouldn't make much sense to interpret the [Corps'] regulation[s] as distinguishing between a stream and its man-made counterpart.").

EPA to "reconsider the definition of tributaries because not all tributaries have ordinary high water marks." SAB Rule Letter at 2.

As the preamble explains, the Corps has been working to address this variability, providing additional technical assistance on this front. *See, e.g.*, 79 Fed. Reg. 22259-10 *citing* R.W. Lichvar and S.M. McColley, U.S. Army Corps of Engineers, *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*, ERDC/CRREL TR-08-12 (2008). In order to provide additional clarity in applying these terms in the field that is also scientifically sound, we recommend that the agencies finalize the definition of tributary and the definition of waters of the United States and then continue to develop, adopt, and implement regionally-specific OHWM and tributary delineation manuals along the lines of the agencies' regionally-tailored wetland delineation manuals that have been in use for decades.

We *do not* support changes in the tributary definition that sacrifice sound science in an effort to draw bright lines. In particular, we oppose the "alternate approach" of disqualifying wetlands, lakes, and ponds that are functioning as tributaries simply because, by their very nature (their waters do not flow through a defined channel), they do not necessarily have a bed and bank and OHWM. *See,* 79 Fed. Reg. 22203. Just as linearly flowing tributaries are defined by bed, bank, and OHWM, wetlands are defined, through an established wetland delineation methodology, by the "3-parameter test:" the presence of hydric soils (which take years to develop), the presence of hydrology during the growing season, and the presence (under normal circumstances) of hydrophytic vegetation. Similarly, lakes and ponds are characterized by the relatively permanent presence of a lake or pond bed and open water. These established, relatively permanent water bodies are critical elements of the tributary system and must continue to be recognized as such and found to be jurisdictional on that basis.

Instead, in the interest of improved clarity, we do support a reorganization of the first part of the tributary definition that more clearly identifies contribution of flow as the key element of every tributary, and specifies two categories of water bodies that function as tributaries and therefore meet the tributary definition. For example:

The term tributary means a water in either of the following two categories:

(a) a water which contributes flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (a)(4) of this section, and which is physically characterized by the presence of a bed and banks and ordinary high water mark, as defined at 33 CFR 328.3(e); or

(b) wetlands, lakes, and ponds (even if they lack a bed and banks or ordinary high water mark), if they contribute flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (a)(4) of this section.

While more clearly defined in regulation for the first time, the proposed tributary definition is essentially the same as the Corps' working definition of tributary at the time of the *Rapanos* decision – a working definition referenced and seemingly supported by Justice Kennedy in his *Rapanos* concurring opinion. Justice Kennedy suggests the current definition of tributary "may

well provide a reasonable measure of whether specific minor tributaries bear a sufficient nexus with other regulated waters to constitute 'navigable waters' under the Act." [109]

B. The Proposed Rule, much like the 2008 Guidance, properly treats many non-tidal ditches as tributaries where they clearly function as tributaries.

Ditches that clearly function as tributaries – contributing flow and pollutants downstream – are regulated as such under both the 2008 Guidance and the Proposed Rule. As the preamble explains, "[d]itches not excluded under paragraphs (b)(3) and (4) of the proposed regulation meet the definition of tributary where they have a bed and banks and ordinary high water mark and they contribute flow directly or indirectly through another water to (a)(1) through (a)(4) waters." 79 Fed. Reg. at 22203.

We are generally supportive of the agencies' proposed rule with respect to the jurisdictional treatment of non-tidal ditches and swales. Non-tidal ditches, including roadside and agricultural ditches, are complicated because they are sometimes carved out of upland, but are often constructed in natural streams and wetlands, are prevalent on the landscape, and where they connect directly or indirectly to the tributary system, they often contribute substantial amounts of pollution and flood water to downstream TNWs or IWs. Such ditch systems have wreaked havoc with water quality in some of the nation's greatest aquatic ecosystems, including the Chesapeake Bay watershed and Mississippi River Basin and Gulf of Mexico.[110]

To maintain and restore the physical, chemical, and biological integrity of the nation's waters, the pollution and flood waters conveyed to downstream tributaries from these tributary ditch systems must be subject to Clean Water Act regulation. The agencies have struck a reasonable balance, consistent with the CWA, the Supreme Court cases, and past practice, by treating non-tidal ditches as tributaries *where they clearly function as tributaries*: where they have a bed, bank, and OHWM, connect directly or indirectly to a TNW or IW, and otherwise function as a tributary and potential source of pollution. *See* 79 Fed. Reg. at 22203.[111]

The preamble concludes, based on the science, that tributary ditches provide the same chemical, physical, and biological functions as other tributaries and have the requisite significant nexus to TNWs and IWs:

> Tributary ditches and other man-made or man-altered waters, if they meet the definition of "tributary," have a significant nexus to (a)(1) through (a)(3) waters due to their effects on the chemical, physical, or biological integrity of those downstream waters. As described above, *tributaries of all flow regimes have a significant nexus to downstream (a)(1) through (a)(3) waters.* Due to the often straightened and channelized nature of ditches, these tributaries quickly move

[109] *Id*. at 2249.
[110] *See, e.g.,* SAB Connectivity Peer Review Report at 23-24, 31-32. *See also,* Section IX.K. *infra;* Dr. Robert Magnien, *Miles of Ditches have Altered Delmarva Peninsula Hydrology,* Chesapeake Bay Journal April 1999 at http://www.bayjournal.com/article.cfm?article=2128 (last checked 11.12.14).
[111] The agencies' proposed criteria of an OHWM, a bed and bank, and additional criteria indicative of tributary function are criteria above and beyond existing regulatory requirements for what is considered a tributary.

> water downstream to (a)(1) through (a)(3) waters. Ditches and canals, like other tributaries, export sediment, nutrients, and other materials downstream."
> 79 Fed. Reg. at 22206.

EPA precedent for protecting man-made or altered waters that function as tributaries began quite early in the Act's implementation. The agency's General Counsel concluded in 1977 that the Arlington Canal, in Buckeye, Arizona, was a "water of the United States," despite describing the Canal as:

> [A]n earthen irrigation ditch which flows roughly parallel to the Gila River [, which has flow that] consists primarily of groundwater pumped from wells, irrigation return flows and treated sewage effluent [and which] takes in water from the main Gila River channel only during periods of heavy flow when upstream users are not diverting all of the flow of the River.[112]

The opinion states that the "facts clearly support the Regional Administrator's finding that the Arlington Canal is a tributary of the Gila River, which is navigable water."[113] And this conclusion was not an aberration; a separate opinion from the General Counsel two years earlier was consistent with this view.[114]

Since the passage of the Act, federal courts have consistently concluded that man-made channels can properly be considered "waters of the United States." For instance, in a case involving the discharge of raw sewage during the 1970s into a Louisiana canal that was adjacent to (and from which water was periodically pumped into) wetlands that were considered to be "waters of the United States," the court found that the canal could be protected either as a water linked to interstate commerce or as a tributary to the wetlands.[115]

In the last decade – both before and after *SWANCC* – numerous federal courts of appeal have found that ditches and canals properly could be protected "waters of the United States." Specifically, the Fourth, Sixth, Seventh, Ninth, and Eleventh Circuits found that such features were properly protected by the Clean Water Act.[116] Similarly, the Second Circuit rejected an

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[112] U.S. EPA, Office of General Counsel, In re: Town of Buckeye, Arizona, 1977 WL 28254, at * 1 (Nov. 11, 1977).
[113] *Id.* (citation omitted).
[114] U.S. EPA, Office of General Counsel, In re: Riverside Irrigation Dist., Ltd. & 17 Others, 1975 WL 23864, at *3-4 (June 27, 1975) (discussing objection about irrigation return canals, EPA's regulations defining "waters of the United States" and a judicial interpretation which noted that tributaries to navigable waters were protected, and concluding, "[i]t thus appears that the waters that are the subject of these permits may well be determined by the finder of fact, applying the statutory and regulatory test to the facts of these cases, to be navigable waters within the definition in the Act.").
[115] *U.S. v. St. Bernard Parish*, 589 F.Supp. 617, 620 (E.D. La. 1984).
[116] *See, e.g., U.S. v. Deaton*, 332 F.3d at 712 (considering effect of pollution into non-navigable tributaries, noting Corps' interpretation that whole tributary system is protected under applicable rules, and holding, "[t]he Act thus reaches to the roadside ditch and its adjacent wetlands"); *Carabell v. U.S. Army Corps of Eng'rs*, 391 F.3d 704, 708 (6th Cir. 2004) (finding that both ends of ditch along border of the property are connected to tributaries of "waters of the United States," making it a tributary, and thus a protected water), *vacated sub nom, Rapanos v. U.S.*, 126 S.Ct. 2208 (2006); *U.S. v. Gerke Excavating, Inc.*, 412 F.3d 804, 805-06 (7th Cir. 2005) ("A stream can be a tributary; why not a ditch? A ditch can carry as much water as a stream, or more; many streams are tiny. It wouldn't make much sense to interpret the regulation as distinguishing between a stream and its man-made counterpart."), *vacated* 126

attempt to limit jurisdiction over a natural tributary that had been "channeled in some places . . . into underground pipes to make room for development. . . ."[117] Cases since *Rapanos* have similarly found that man-made or man-altered tributaries are jurisdictional.[118]

In keeping with this approach, the Bush Administration staunchly defended the protection of the entire tributary system, ditches included, before the Supreme Court. Solicitor General Clement explained "the definition of a tributary is basically any channelized body of water that takes water in a flow down to the traditional navigable water."[119] Specifically, he noted that "[t]he Corps has not drawn a distinction between man-made channels or ditches and natural channels or ditches. And, of course, it would be very absurd for the Corps to do that since the Erie Canal is a ditch."[120]

Even opponents of the continued broad scope of the Act recognize that ditches have long been covered by the Clean Water Act. One such opponent observed (in a 2006 email about the draft guidance sent to staff at the Council on Environmental Quality ("CEQ")) that ditches had "long been covered under [the] CWA," and wondered whether excluding such "artificial" waters from coverage would create legal vulnerabilities.[121]

C. The Proposed Rule excludes from the definition of tributary many ditches and certain other features that are not considered tributaries.

In an effort to clearly define tributaries, the proposed rule excludes from the definitions of tributaries and "waters of the United States" gullies, rills, and non-wetland swales.[122] As the preamble explains, "Of importance with respect to tributaries is the exclusion of gullies, rills, non-wetland swales, and certain ditches." 79 Fed. Reg. at 22204. The agencies also explain that "ephemeral features located on agricultural lands that do not possess a bed and bank are not tributaries." *Id.*

Importantly, in response to concerns from agriculture and local governments, the proposed rule clearly excludes from the definition of tributaries and the definition of "waters of the United

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S.Ct. 2964 (2006), *on remand* 464 F.3d 723 (7th Cir. 2006) (remanding to district court to apply *Rapanos*), *cert. denied* 128 S.Ct. 45 (2007); *Headwaters, Inc. v. Talent Irrigation Dist.*, 243 F.3d 526, 533 (9th Cir. 2001) (holding that irrigation canals were "tributaries" protected as "waters of the United States"); *U.S. v. Eidson*, 108 F.3d 1336, 1342 (11th Cir.) ("There is no reason to suspect that Congress intended to regulate only the natural tributaries of navigable waters. Pollutants are equally harmful to this country's water quality whether they travel along man-made or natural routes."), *cert. denied*, 522 U.S. 899 (1997).

[117] *U.S. v. TGR Corp.*, 171 F.3d 762, 765 (2d Cir. 1999).

[118] *See* note 107, *supra*.

[119] Transcript of Oral Argument, *Rapanos v. United States*, 126 S.Ct. 2208 (2006), at 39 (Feb. 21, 2006), available at http://www.supremecourt.gov/oral_arguments/argument_transcripts/04-1034.pdf.

[120] *Id.*

[121] Email from Jeff Eisenberg, National Cattleman's Beef Ass'n, to Greg Schildwachter, CEQ, Sept. 13, 2006, at 1 (produced in response to Freedom of Information Act by Council on Environmental Quality). The message went on to convey that, despite their legal concerns, "[w]e of course are happy to have ditches excluded." *See also Dialogue: Will the New Waters of the United States (WOTUS) Rule Float?* 44 ELR 10862 (10-2014), *Comments of Deidre Duncan* ("It is true that the Corps has, in case-specific circumstances, regulated ditches in the sec. 404 program, but what is also clear is that ditches have not previously been regulated as waters of the United Sates under non-sec. 404 CWA programs.").

[122] 33 CFR 328.3 (b)(5)(vii); 33 CFR 328.3(c)(5); 79 Fed. Reg. 22204; *see also Id.* at 22218-19.

States" two types of ditches that might otherwise be considered tributaries: 1) "ditches that are excavated wholly in uplands, drain only uplands, and have less than perennial flow;" and 2) ditches that do not contribute flow, either directly or through another water, to a water identified in paragraphs (a)(1) through (4) of this section." *See e..g.*, 33 CFR 328.3 (b)(3) and (4); 79 Fed. Reg. at 22203.

In doing so, the agencies not only codify these CWA ditch exemptions for the first time, but they propose to broaden the previously informal upland ditch exemption by excluding from jurisdiction upland ditches with less than perennial flow. Not only do the agencies require year round presence of water (under normal or above normal rainfall conditions), but the agencies require year round *flow of water.* Upland ditches that have year round water, but less than year round flowing water apparently do not qualify as tributaries under the proposed rule language, even if those flows are episodically torrential, sending flood waters, sediment, and pollutants downstream. *Id.*

1. *The perennial flow requirement is not consistent with the connectivity science and should be revisited.*

The agencies request comment on the question of the appropriate flow regime to support upland ditch exclusion from Clean Water Act protections. This proposed expansion of the ditch exemption based on perennial flow regime is not based on science and it will exclude from Clean Water Act protections ditches that function as tributaries, contributing pollutants downstream. As the agencies note with respect to tributary ditches, "tributaries of all flow regimes have a significant nexus to downstream (a)(1) through (a)(3) waters." 79 Fed. Reg. 22206.[123] Instead, the agencies justify their perennial flow jurisdictional requirement on grounds that, "[i]dentifying upland ditches with perennial flow is straightforward and will provide for consistent, predictable, and technically accurate determinations at any time of year."

The final rule should either limit this exemption to upland ditches with less than intermittent flow, or clearly demonstrate how and why upland ditches with less than perennial flow will not contribute water, sediment, nutrients, and other pollutants downstream.

In the interest of increased certainty and predictability, the proposed rule excludes from Clean Water Act jurisdiction many upland ditches that function as tributaries. The agencies have already heeded the calls from the regulated community to clarify and to expand Clean Water Act exemptions for ditches. Excluding even more tributary ditches from Clean Water Act regulation in the final rule will put the nation's waters at increased risk.

[123] *See also* Connectivity Report at 1-3 ("[a]ll tributary streams, including perennial, intermittent, and ephemeral streams, are physically, chemically, and biologically connected to downstream rivers via channels and associated alluvial deposits where water and other materials are concentrated, mixed, transformed, and transported."); SAB Connectivity Peer Review Report at 3 (affirming the Connectivity Report's conclusion).

D. The agencies' treatment of headwater and ephemeral streams is scientifically and legally sound.

The preamble to the proposed rule, including the Appendix A Science Evidence, includes the well-documented conclusion that:

> Tributaries that are small, flow infrequently, or are a substantial distance from the nearest (a)(1) through (a)(3) water (e.g., headwater perennial, intermittent, and ephemeral tributaries) are essential components of the tributary network and have important effects on the chemical, physical, and biological integrity of (a)(1) through (a)(4) waters, contributing many of the same functions downstream as larger streams. When their functional contributions to the chemical, physical and biological conditions of downstream waters are considered at a watershed scale, the scientific evidence supports a legal determination that they meet the 'significant nexus' standard articulated by Justice Kennedy in *Rapanos*. 79 Fed. Reg. 22206, 22231-32.[124]

For example, intermittent headwaters streams throughout the Rocky Mountain West contribute cold, clean water to larger perennial tributaries that flow into traditionally navigable or interstate waters. Fish move through both intermittent and ephemeral streams[125] and fish and other aquatic species use these systems for certain life stages.[126]

The continued inclusion of ephemeral streams as tributaries and "waters of the United States" in accordance with the proposed rule is well supported by the scientific literature, the CWA, the case law, and past agency practice.[127] EPA has estimated that intermittent or ephemeral streams comprise fifty-nine percent of all stream miles in the United States, excluding Alaska.128 As Western Resource Advocates notes in its Proposed Guidance Comments (July 2011), the vast majority of river miles in the Interior West are smaller headwaters and plains streams that do not flow year-round. EPA Region 8 estimates that only 17% of the waters within its five states flow

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[124] *See* note 122, *supra.*

[125] Stefferud & Steffrud, "Fish Movement through Intermittent Stream Channels: A Case History Study" (2007), *available at* http://www.usbr.gov/lc/phoenix/biology/azfish/pdf/intermittentStreams.pdf.

[126] Wigington, et al. "Coho Salmon Dependence on Intermittent Streams," (2006), *available at* http://www.roguebasinwatersheds.org/files/intermittent%20streams%20and%20coho.pdf.

[127] *See, e.g., United States v. Deaton*, 332 F.3d 698, 712 (4th Cir. 2003), *cert denied*, 124 S. Ct. 1874 (2004) ("jurisdiction over the whole tributary system of any navigable waterway is warranted"); *Quivira v. EPA*, 765 F.2d 126 (10th Cir. 1985) (arroyo with continuous groundwater connection and occasional surface water connection jurisdictional under the Act); *United States v. Ashland Oil and Transportation Co.*, 504 F.2d 1317, 1325 (6th Cir. 1974) (finding "Congress knew exactly what is was doing and that it intended the Federal Water Pollution Control Act to apply, as Congressman Dingell put it, 'to all water bodies, including main streams and their tributaries.' Certainly the Congressional language must be read to apply to our instant case involving pollution of one of the tributaries of a navigable river. Any other reading would violate the specific language of the definition [of navigable waters as waters of the United States] and turn a great legislative enactment into a meaningless jumble of words.") (quoting 118 Cong. Rec. 33756-57).

[128] Letter from Benjamin H. Grumbles, Assistant Administrator, U.S. Environmental Protection Agency to Jeanne Christie, Executive Director, Association of State Wetland Managers (Jan. 9, 2006) [mistakenly date stamped Jan. 9, 2005] at 2.

year-round.[129] In Colorado and Utah, respectively, only 25 and 21 percent of stream miles are perennial.[130]

In Arizona, an estimated 96% of the state's stream miles are intermittent or ephemeral.[131] Moreover, in Arizona, in the early 2000s, the State estimated that 97% of its permitted point source discharges were to headwaters, intermittent and ephemeral streams.[132] In its comments on the 2007 *Rapanos* Guidance, the Arizona Department of Environmental Quality (ADEQ) acknowledged that without Clean Water Act jurisdiction over its intermittent and ephemeral streams, it "will be unable to assure the general public that these discharges of effluent in the desert are not harmful to the environment, and we will be unable to achieve our overall mission to enhance and protect Arizona's environment."[133]

The agencies' rulemaking record also considers that, particularly in the West, some rivers and streams that are ephemeral today used to flow with greater frequency because of water supply infrastructure that has diverted the natural flows of these rivers and streams elsewhere.[134] While the South Platte River in Colorado once flowed year round, today there are reaches of the South Platte where the flow in the river can be composed entirely of effluent from point source permitted discharges.[135]

Because the watersheds in the West have a high concentration of ephemeral streams, the contribution of these streams to the larger tributaries is critical to maintain tributary function, including the function of providing habitat to native species that even ephemeral streams provide. WRA notes, for example, one set of three small warm/cool water fishes – the bluehead sucker, the flannelmouth sucker and the roundtail chub – that is the subject of a conservation

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[129] *See* Congressionally Requested Report on Comments Related to Effects of Jurisdictional Uncertainty on Clean Water Act Implementation, Report No. 09-N-0149 at 8 (2009), *available at* http://www.epa.gov/oig/reports/2009/20090430-09-N-0149.pdf.

[130] *See* Streams Lakes and Trout Streams of Colorado, http://www.cotrout.org/Portals/0/pdf/legislative/State%20of%20Colorado%20Ephmeral%20Comparison.pdf; EPA, Percentage of Surface Drinking Water from Intermittent, Ephemeral, or Headwater Streams in Utah, *available at* http://www.epa.gov/owow/wetlands/science/surface_drinking_water/pdfs/surface_drinking_water_ut.pdf (last visited 06/28/11).

[131] *See* Letter from Stephen A. Owens, Director, Arizona Department of Environmental to Benjamin H. Grumbles, Assistant Administrator, Office of Water, U.S. Environmental Protection Agency (December 5, 2007) at 2 (describing the quality and function of surface waters in Arizona) (submitted as comments on the Guidance) (2007 ADEQ Comments); *See* NWF, NMWF, TU, DU, *Imperiled Treasures: How Recent Supreme Court Decisions and Agency Actions Have Endangered Southwest Waters and Wildlife* (January 2008) at 16; Nadeau & Rains, Hydrological Connectivity Between Headwater Streams and Downstream Waters: How Science can Inform Policy, 43 J. Am. Water Resources Ass'n 118, Fig. 3b (2007), *available at* http://www.albergstein.com/cao/Best%20Available%20Science/Headwater%20Streams/JAWRA%20Headwaters%20Issue/Headwaters%20ecological%20connectivity%20-%20science%20and%20policy.pdf.

[132] *Id.* at 127.

[133] 2007 ADEQ Comments, *Imperiled Treasures*, *supra* note 131.

[134] *See, e.g.*, 79 Fed. Reg. at 22201 *citing U.S.* v. *Moses*, 496 F. 3d 984 (9th Cir. 2007), *cert. denied*, 554 U.S. 918 (2008); SAB Connectivity Peer Review Report at 31-32, 57-58; Western Resource Advocates 2014 Rule Comments at 9, 16.

[135] *Id. citing* USGS, Water Quality in the South Platte River: Colorado, Nebraska & Wyoming 1992-1995, Circular 1167 at 18 (1998).

plan among Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming.[136] These fish occupy primarily headwaters tributaries, many of which are intermittent or ephemeral. In one study, the fish were found in deep pools above ephemeral reaches, indicating that both adult and juvenile fish move throughout their headwaters habitat, including along ephemeral channels.[137]

Natural and artificial ephemeral streams, even if they carry only stormwater (or effluent from point source discharges), eventually flow into intermittent or perennial tributaries or traditionally navigable or interstate waters. The pollutants in the storm water or effluent also find their way downstream. WRA offers the example that, in an effort to keep its drinking water source watershed as clean as possible, the Pagosa Area Water and Sanitation District has published a page on its website cautioning loggers to "avoid poor logging practices" that cause excessive sediment contributions to the larger system.[138]

There is agency precedent for regulating ephemeral streams. In 2007, the Arizona Department of Environmental Quality (ADEQ) commented to EPA that, "Arizona's ephemeral streams have been considered jurisdictional waters at least since the first days of the 1972 [Clean Water Act]."[139] Prior to the 2007 guidance, the Los Angeles District often took jurisdiction on "dry washes," at least where they could readily identify an Ordinary High Water Mark.[140] In 2007, the Kansas City District found jurisdictional a first-order, ephemeral, stream based on the presence of a "significant nexus."[141] Even the 2008 Guidance extended CWA jurisdiction to "[c]ertain ephemeral waters in the arid west" where they are "tributaries and they have a significant nexus to downstream traditional navigable waters. For example, in some cases these ephemeral tributaries may serve as a transitional area between the upland environment and the traditional navigable waters." 142 The 2008 Guidance failed to explain, however, why such waters outside of the arid West do not likewise provide important functions and warrant protection.

E. The 2008 Guidance has undermined protections for ephemeral streams and must be withdrawn.

As noted previously, the 2008 Guidance has undermined protections for numerous ephemeral streams that almost certainly had a significant nexus with downstream TNWs or IWs, at least when considered in combination with other tributaries within the watershed. Summarized here are just a few examples:

- 2008 EPA correspondence describes a Kansas City District presumption that first order ephemeral streams, *as a class*, are not waters of the United States, as well as draft

[136] *Id.* at 10, *citing* White Water Park at Rock Park, http://www.cityofsparks.us/residents/parks-and-facilities/whitewater-park-rock-park (last visited Oct. 3, 2014).
[137] Michael R. Bower, et al., *Habitat Features Affect Bluehead Sucker, Flannelmouth Sucker, and Roundtail Chub Across a Headwater Tributary System in the Colo. River Basin*, 23 J. FRESHWATER ECO. 3, pp. 347-58 (Sept. 2008), *available at* http://www.uwyo.edu/frahel/pdfs/bower-2008-1.pdf.
[138] *Id. citing* Watersheds, http://www.pawsd.org/watershed-protection.html (last visited Oct. 3, 2014).
[139] 2007 ADEQ Comments, *Imperiled Treasures* at 17, *supra* note 131.
[140] *Imperiled Treasures*, *supra*, at 17.
[141] *See* U.S. Army Corps of Eng'rs, Kansas City District, Approved Jurisdictional Determination: Coffey County RWD 3, NWK-2007-02080-2, at 5 (Dec. 6, 2007) (describing multiple effects of stream).
[142] 2008 Guidance at 11.

jurisdictional determinations that underestimated the length of stream reaches, ignored site visit data, and mischaracterized the ability of streams and associated wetlands to filter pollutants and other affect the integrity of downstream TNWs.[143]

- The Omaha District found an ephemeral stream to be unprotected based on lack of significant nexus, where the flow of the tributary was unlikely to reach a traditionally navigable water as a result of the intervening presence of "a water-supply reservoir with all impounded water piped to municipal water treatment plants or for re-injection into local bedrock aquifers."[144] This seems completely at odds with the Corps' Instructional Guidebook's observation that "[g]enerally, impoundment of a water of the U.S. does not affect the water's jurisdictional status,"[145] but is likely attributable to the focus in the guidance on the degree of flow to downstream waters.

- The Nashville District rejected Clean Water Act protections for three ephemeral streams, despite acknowledging the potential importance of such waters. In each case, the district based its assessment of the likelihood of a downstream effect on nothing more than distance and its unsubstantiated conclusion that such distance would attenuate the impact. As the district said in each case: "It is possible during a heavy precipitation event that the unnamed tributary to Horn Springs Branch could carry pollutants and flood waters to TNW along with transferring nutrients and oranic [sic] carbon. However, due to the fact that the water has to travel through two tributaries and between 5-10 river miles to the TNW, the impacts, if any would be very minor."[146]

- The Jacksonville District declared an ephemeral tributary draining a sub-basin approximately 7 acres in size to be non-jurisdictional, with hardly any analysis; rather, the determination states, in a conclusory fashion, that "[t]he frequency and amount of flow in the ditch is not significant enough to provide notable physical, chemical, or biological benefits to downstream waters or a TNW."[147]

- The Huntington District made what appears to us to be conflicting non-jurisdictional and jurisdictional determinations for ephemeral and intermittent tributaries in Ohio. Two determinations found that there was no "significant nexus."[148] On the other hand, the

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[143] *Courting Disaster*, *supra*, at 24 *citing* EPA Memoranda dated February 27, 2008 and July 10, 2008.
[144] *Courting Disaster*, *supra*, at 14-15 *describing and citing* U.S. Army Corps of Eng'rs, Omaha District, Approved Jurisdictional Determination: Channel Work in the North Tributary of Newlin Gulch at Lagae Ranch, NWO-2007-2195-DEN, at 3 (Nov. 1, 2007). *See* Mark Jaffe, *Rulings drain protections for state waterways*, Denver Post (May 10, 2009).
[145] Instructional Guidebook at 31.
[146] U.S. Army Corps of Eng'rs, Nashville District, Approved Jurisdictional Determinations: Horn Springs Group, 200701845, 200701844, and 200701843, at 6 (Sept. 5, 2007).
[147] U.S. Army Corps of Eng'rs, Jacksonville District, Approved Jurisdictional Determination: SAJ-2007-4563, at 5 (Aug. 31, 2007).
[148] U.S. Army Corps of Eng'rs, Huntington District, Approved Jurisdictional Determination: Good Samaritan Hospital, LRH-2007-449-GMR, at 7 (Oct. 4, 2007) (finding that significant nexus was absent because, *inter alia*, stream was of low quality, lacked adjacent wetlands, was contained in a culvert over 40% of its length and does not have a developed floodplain); U.S. Army Corps of Eng'rs, Huntington District, Approved Jurisdictional Determination: North Clayton Development, LRH-2006-518-GMR, at 7 (Oct. 5, 2007) (finding lack of significant nexus because it conveys a small amount of stormwater and does not provide habitat or have significant floodplain),.

district concluded in a contemporaneous jurisdictional determination that an ephemeral stream was protected because the stream would carry stormwater to the tributary system and "serve to dissipate energy" to the tributary system, things that the other streams presumably would do as well.[149]

- The Buffalo District found three separate ephemeral tributaries to the Cuyahoga River to be non-jurisdictional based on a lack of "significant nexus," without considering the tributaries collectively (much less similar tributaries in the region).[150]

Similarly, we are aware of at least one example where an ephemeral tributary that seems to have an obvious "significant nexus" was apparently the subject of internal debate among the agencies. In a December memorandum, EPA and the Corps headquarters asserted jurisdiction (indicating to us that there was a dispute in the field) over an ephemeral tributary to Canyon Lake, in California, a TNW that is listed as impaired for nitrogen, phosphorus, and pathogens.[151] There was evidence that, "particularly under wet conditions," sources in the watershed in which the segment is located "contribute significant amounts of nutrients" to the lake.[152] In addition, modeling and analysis showed that "it is reasonable to expect pathogens . . . to be present in runoff from the land uses in the . . . sub-watershed," and that "even if the pathogen loads from [the segment] were diluted by unpolluted flows from the rest of the watershed flowing to Canyon Lake, the resulting concentration of fecal coliform at the point of entry to Canyon Lake would likely exceed applicable state water quality standards for pathogens."[153] Although the agencies ultimately reached the right result in this particular case, such an obvious decision should never have required the time, resources, and uncertainty entailed in headquarters intervention.

VIII. The Proposed Rule Properly Asserts Jurisdiction Over Adjacent Waters.

We support the agencies' proposed rule that "all waters, including wetlands, adjacent to a water identified in paragraphs (a)(1) through (5) of this section are "waters of the United States" by rule, because adjacent waters are "integrally linked to the chemical, physical, or biological functions of the (a)(1) through (a)(5) waterbodies to which they are adjacent." *See* 33 CFR 328.3(a)(6); 79 Fed. Reg. at 22206-7.

The proposed rule is strongly supported by the draft Connectivity Report, which thoroughly documents and supports its conclusion that: "[w]etlands and open-waters in landscape settings that have bidirectional hydrologic exchanges with streams or rivers (e.g., wetlands and open-

[149] Army Corps of Eng'rs, Huntington District, Approved Jurisdictional Determination: North Clayton Development, LRH-2006-518-GMR, at 7 (Oct. 5, 2007).
[150] Army Corps of Eng'rs, Buffalo District, Approved Jurisdictional Determination: City of Independence, 2006-00191, Ephemeral Stream 1, at 5 (Nov. 1, 2007); *see also* Army Corps of Eng'rs, Buffalo District, Approved Jurisdictional Determination: City of Independence, 2006-00191, Ephemeral Stream 2, at 5 (Nov. 1, 2007); Army Corps of Eng'rs, Buffalo District, Approved Jurisdictional Determination: City of Independence, 2006-00191, Ephemeral Stream 3, at 5 (Nov. 1, 2007).
[151] Memorandum from Brian Frazer, Wetlands & Aquatic Resources Regulatory Branch, U.S. EPA & Russell L. Kaiser, Regulatory Community of Practice, U.S. Army Corps of Eng'rs, Assertion of Jurisdiction for Jurisdictional Determination SPL-261-FBV (Dec. 6, 2007).
[152] *Id.* at 3.
[153] *Id.* at 4.

waters in riparian areas and floodplains) are physically, chemically, and biologically connected with rivers" through multiple processes, and that they "serve an important role in the integrity of downstream waters because they also act as sinks by retaining floodwaters, sediment, nutrients, and contaminants that could otherwise negatively impact the condition or function of downstream waters." *Connectivity Report* at 1-3. The SAB Connectivity Peer Review Report supports this conclusion at 5 concluding that there is strong scientific support for the overall conclusion that "bidirectional" wetlands and waters in floodplain settings are physically, chemically, and biologically connected with rivers through multiple pathways. Additional literature could be included in the Report to bolster this conclusion and related findings.

The scientific evidence also demonstrates that shallow groundwater connections serve as hydrologic connections between surface waters and should be considered in assessing connectivity and effects on downstream waters. *See, e.g., Connectivity Report* at 1-7 to 1-14. This principle is scientifically sound and widely accepted as legally sound as well.[154]

The agencies' finding that all adjacent waters have a significant nexus to downstream waters and are jurisdictional by rule is fully consistent with and relevant to Justice Kennedy's significant nexus test. Justice Kennedy sets forth a clear framework for establishing adjacent waters and other categories of waters as jurisdictional by rule. First, he defines "significant nexus" and establishes significant nexus as the "touchstone for CWA jurisdiction." *See Rapanos, supra*, at 780 (defining significant nexus); 79 Fed. Reg. at 22209.

Justice Kennedy then provides that the agencies can, through regulation or adjudication identify categories of waters that "are likely, in the majority of cases, to perform important functions for an aquatic system incorporating navigable waters." *Rapanos* at 780-81. The agencies rightly

[154] *See*, *Healdsburg*, 496 F.3d at 1000 (citing to underground hydrologic connections as a basis for establishing a significance nexus between two bodies under Justice Kennedy's standard); *United States v. Banks*, 115 F.3d 916, 921 (11th Cir. 1997) (finding that wetlands that were at least one half mile from navigable waters were jurisdictional due to a hydrologic connection that "was primarily through groundwater, but also occurred through surface water during storms"); *United States v. Tilton*, 705 F.2d 429 (11th Cir. 1983) (finding that wetlands with rare surface water connections, but demonstrated ecological and subsurface hydrological connections, were jurisdictional); *see also*, *Idaho Rural Council v. Bosma*, 143 F. Supp. 2d 1169, 1180 (D. Id. 2001) ("[T]he interpretive history of the CWA only supports the unremarkable proposition with which all courts agree – that the CWA does not regulate 'isolated/nontributary' groundwater which has no affect on surface water. It does not suggest that Congress intended to exclude from regulation discharges into hydrologically connected groundwater which adversely affect surface water. For these reasons, the Court finds that *the CWA extends federal jurisdiction over groundwater that is hydrologically connected to surface waters that are themselves waters of the United States*.") (emphasis added) (citations omitted); *Quivira v. EPA*, 765 F.2d 126 (10th Cir. 1985) (arroyo with continuous groundwater connection and occasional surface water connection to downstream jurisdictional waters protected under the Act); *Washington Wilderness Coalition v. Hecla*, 870 F. Supp. 983, 990 (E.D. Wash. 1994) ("[S]ince the goal of the CWA is to protect the quality of surface waters, any pollutant which enters such waters, whether directly or through groundwater, is subject to regulation by NPDES permit."); *Sierra Club v. Colorado Refining Company*, 838 F. Supp. 1428, 1434 (D. Colo. 1993) (where the Judge stated that, "I conclude that the Clean Water Act's preclusion of the discharge of any pollutant into 'navigable waters' *includes such discharge which reaches 'navigable waters' through groundwater*.") (emphasis added) (citations omitted); *McClellan Ecological Seepage Situation v. Weinberger*, 707 F. Supp. 1182, 1196 (E.D.Ca. 1988), *vacated and remanded on other grounds*, *M.E.S.S. v. Perry*, 47 F.3d 325 (9th Cir. 1995), *cert. denied*, 516 U.S. 807 (1995) (where the Court found that discharges to groundwater could be regulated under the Act if "discharges from the waste pits have an effect on surface waters of the United States" and it could be established that the groundwater was "naturally connected to surface waters that constitute 'navigable waters' under the Clean Water Act").

conclude, based on the scientific evidence, that "all adjacent waters should be jurisdictional by rule because the discharge of many pollutants (such as nutrients, petroleum wastes, and other toxic pollutants) into adjacent waters often flow into and thereby pollute the traditional navigable waters, interstate waters, and the territorial seas." Therefore, "adjacent waters, as defined in the proposed rule, "are likely, in the majority of cases, to perform important functions for an aquatic system incorporating navigable waters." *Rapanos* at 781-82. 79 Fed. Reg. at 22210.

A. The Agencies' proposal to revise the existing "adjacent wetlands" jurisdictional category to include "adjacent waters" provides additional clarity and is scientifically and legally sound.

The agencies propose to revise the existing "adjacent wetlands" jurisdictional category to be the "adjacent waters" category in order to include not only adjacent wetlands but also "ponds, lakes, and similar water bodies that provide similar functions which have a significant nexus to traditionally navigable waters, interstate waters, and the territorial seas." These non-wetland adjacent waters have typically been considered "waters of the U.S." in the past, certainly as "other waters" prior to the 2001 *SWANCC* decision. *See* 33 CFR 328.3 (a)(3); 79 Fed. Reg.22207. As the agencies note, adjacent wetlands, oxbow lakes and adjacent ponds are "integral parts of stream networks because of their ecological functions and how they interact with each other, and with downstream traditional navigable waters, interstate waters, or the territorial seas." 22209.

Together these waters are "an integrated ecological system, and discharges of pollutants, including discharges of dredged or fill material, into these components of that ecological system, must be regulated under the CWA to restore and maintain the chemical, physical, and biological integrity of these waters." 79 Fed. Reg. at 22210; *see also*, 22260 *citing* 42 FR 37128, July 19, 1977 ("The regulation of activities that cause water pollution cannot rely on …artificial lines … but must focus on all waters that together form the entire aquatic system….").

The agencies' adjacent waters proposal is supported by the Connectivity Report and its Peer Review Report, the scientific literature, as well as by the agencies' "scientific and technical knowledge and practical expertise" regarding the ecological connectivity of these waters to TNWs, IWs, and the territorial seas. 79 Fed. Reg. at 22207. Again, the draft Connectivity Report concluded that: *"[w]etlands and open-waters* in landscape settings that have bidirectional hydrologic exchanges with streams or rivers (e.g., *wetlands and open-waters* in riparian areas and floodplains) are physically, chemically, and biologically connected with rivers" through multiple processes, and that they "serve an important role in the integrity of downstream waters because they also act as sinks by retaining floodwaters, sediment, nutrients, and contaminants that could otherwise negatively impact the condition or function of downstream waters." *Connectivity Report* at 1-3. The SAB Connectivity Peer Review Report supports this conclusion at 5 concluding that there is strong scientific support for the overall conclusion that *"bidirectional" wetlands and waters in floodplain settings* are physically, chemically, and biologically connected with rivers through multiple pathways. It is consistent with the CWA, the Supreme Court decisions, the best available science, and the agencies scientific and technical expertise. 79 Fed. Reg. at 22210.

B. The agencies' definition of "neighboring," "floodplain," and "riparian area" to support and clarify the existing definition of adjacent is scientifically and legally sound.

We support the agencies' continued reliance on the existing definition of "adjacent," meaning "bordering, contiguous or neighboring." Under the Corps' existing rules (and related case law and agency precedent), "[w]etlands separated from other "waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands.'"33 CFR 328.3(c). We concur with the agencies' emphasis that the presence of man-made barriers as well as natural river berms and beach dunes do not sever the hydrological and ecological interconnections between wetlands and adjacent jurisdictional waters. 79 Fed. Reg. 22207, 22210, 22243-46. [155] While this key factor in determining adjacency is explicit in the agencies' long-standing regulatory definition of "adjacent," it has at times been overlooked in the field, leading to inconsistent jurisdictional determinations and compromised protections for important wetland systems.[156] Clarification and documentation of the legal and scientific basis for this important principle of adjacency provide increased certainty and better protection for important wetland systems. Extending the existing adjacent wetlands term to non-wetland adjacent waters is fully consistent with the science and law as noted above.

We support the agencies' proposal to clarify the term "adjacent" by defining "neighboring" as "waters located within the riparian area or floodplain of a water identified in paragraphs (a)(1) through (a)(5) of this section …." See 33 CFR 328.3(c)(2); 22207. We agree that one *sufficient* condition of adjacency should be location within a riparian area or floodplain. And we generally support the agencies' proposal to define the lateral reach of the term neighboring by proposing science-based definitions of "riparian area" and "floodplain" for purposes of defining neighboring and adjacency. 79 Fed. Reg. at 22207.

We appreciate the agencies' clear statements limiting the definition of "adjacent waters" to the *waters located within* the riparian area or floodplain – not the entire riparian area or floodplain which may include both upland areas as well as wetlands or open waters. *See* 79 Fed. Reg. at 22207 ("Absolutely no uplands located in 'riparian areas' and 'floodplains can ever be 'waters of the United States' subject to jurisdiction of the CWA."). With that important clarification, we support the agencies' definition of riparian area to mean: "an area bordering a water where surface or subsurface hydrology directly influence the ecological processes and plant and animal community structure in that area…." *Id.*

Similarly, we generally support the agencies' science-based definition of "floodplain" to mean "an area bordering inland or coastal waters that was formed by sediment deposition from such water under present climatic conditions and is inundated during periods of moderate to high

[155] Courts have confirmed that severances of surface hydrological connectivity do not defeat jurisdiction or adjacency. In *Healdsburg*, the overtopping of a levee separating the pond and wetland from the nearby river were rare events and most hydrologic connection was subsurface. *See Healdsburg*, 496 F.3d at 1000. Additionally, the Federal Appeals Court for the Eleventh Circuit found that, "[M]an-made dikes and barriers separating wetlands from other waters of the United States *do not defeat adjacency*." *Banks*, 115 F.3d. at 921 (emphasis added) (citations omitted). In *United States v. Tilton*, the Eleventh Circuit also found jurisdictional existed over wetlands that were separated from an adjacent river by an earthen berm at least thirty feet wide. 705 F.2d 429.

[156] *See, e.g.,Courting Disaster* at 13 and 20.

water flows." *Id*. We agree with Ducks Unlimited that the reference to *"formed by sediment deposition from such water under present climatic conditions…."* may warrant clarification to ensure that it does not infer "current land use conditions." Recent landscape alterations, including levee construction and extensive land use change, have in many cases changed the height and frequency of flooding in and around many historic floodplains.

1. *Efforts to further clarify the definition of "floodplain" must be scientifically sound and not place undue emphasis on geographic proximity.*

We recognize – as do the agencies – that while reliance on "best professional judgment" will often lead to sound determinations, the preamble guidance for determining the extent of the floodplain leaves considerable uncertainty. We agree that additional guidance is necessary to provide greater clarity and certainty to the public, and better guidance to the regulatory staff who will be applying the rule in the field. The agencies' proposal acknowledges the variability in the size of the floodplain and seeks comment on whether the rule text itself should provide greater specificity regarding "how the agencies will determine if a water is located in the floodplain of a jurisdictional water." 79 Fed. Reg. 22209.

We urge the agency to consider the Connectivity Report,[157] the SAB Connectivity Peer Review Report and the science-based recommendations offered during the public comment period in considering additional specificity that is scientifically sound. We consider the agencies' reference to a *"10 to 20 year flood interval zone"* to be a relatively high frequency flood zone that is far too narrow to reflect the actual floodplain in many if not most circumstances. This narrow floodplain reference is inconsistent with the scientific literature and analysis in the draft Connectivity Report and the SAB Connectivity Peer Review Report, including the Connectivity Report's definition of floodplain as an area "inundated during moderate to high flows."[158] We support the proposed rule definition's use of the phrase, *"is inundated during periods of moderate to high flows,"* and we expect something more on the order of 100 years to be a more reasonable approximation of "high flows," especially given the increasing frequency of large floods in many areas and the increasing flood damage costs and loss of life that are incurred in conjunction with these floods.

We do not, however, support the use of existing flood insurance or other flood zone maps to define floodplain limits in most cases because it is our understanding that these are unavailable in many areas and are not accurate or up to date in others. Instead, we agree with Ducks Unlimited's 2014 Rule Comments supporting the use of more objective, science-based surrogate criteria such as soil classifications. Given the definition's reference to the central element of *"sediment deposition,"* the agencies should consider elements of soil and/or geologic characterizations that could serve as a surrogate for helping to narrow the understanding and/or definition of floodplains for purposes of this rule.

It is important that the agencies' final definition of floodplain be premised on ecological function rather than geographic proximity. As a 2002 Corps guidebook for the Northern Rockies states, "It cannot be overemphasized … that the wetlands and the ecological functions they provide are

[157] *See, e.g.,* Draft Connectivity Report at Appendix A-5 (Definition of floodplain).
[158] *Id.*

inextricably embedded within the context of the floodplain mosaic."[159] Another Corps report confirms that the Upper Yellowstone River drainage has many wetland mosaic complexes in the floodplain.[160]

The federally endangered razorback sucker of the Colorado River Basin is one example of an aquatic species that moves between wetlands and rivers during different life-stages:

> To complete its life cycle, the razorback sucker moves between adult, spawning, and nursery habitats. Spawning occurs during high spring flows when razorback sucker migrate to cobble bars to lay their eggs. Larvae drift from the spawning areas and enter backwaters or floodplain wetlands that provide a nursery environment with quiet, warm, and shallow water.
>
> Research shows that young razorback sucker can remain in floodplain wetlands where they grow to adult size. As they mature, razorback sucker leave the wetlands in search of deep eddies and backwaters where they remain relatively sedentary, staying mostly in quiet water near the shore.[161]

Courts have also found that ecological factors can serve to establish adjacency. For instance, in *Healdsburg*, the Ninth Circuit Court of Appeals found a significant nexus existed between the wetlands and pond area at issue and the nearby navigable river based on the ecological considerations. The court noted that "[t]he Pond and its wetlands support substantial bird, mammal and fish populations, all as an integral part of and indistinguishable from the rest of the Russian River ecosystem…. As the district court observed, these facts make Basalt Pond indistinguishable from any of the natural wetlands alongside the Russian River that have extensive biological effects on the River itself."[162] Similarly, in *Cundiff*, the District Court,in a decision upheld by the Sixth Circuit Court of Appeals, noted "habitat support for plant and wildlife species" and impacts to "aquatic food webs" as justifying the existence of a significant nexus between wetlands and a downstream navigable water.[163] Additionally, prior to *SWANCC*, in *Tilton*, the Eleventh Circuit Court of Appeals upheld jurisdiction noting that the wetlands provided important functions such as offering habitat for a diverse array of wildlife, producing food for the food chain, filtering upland runoff before such runoff entered other waters, serving as a buffer for storm runoff, and storing storm water and thus preventing flooding damage from occurring.[164]

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[159] Hauer et al, A Regional Guidebook for Applying the Hydrogeomorphic Approach to Assessing Wetlands Functions of Riverine Floodplains in the Northern Rocky Mountains, ERDC/EL TR-02-21 at 11 (2002), *available at* http://el.erdc.usace.army.mil/elpubs/pdf/trel02-7.pdf.

[160] U.S. Army Corps of Engineers, Wetlands Regulatory Assistance Program, "Upper Yellowstone River Hydrogeomorphic Functional Assessment for Temporal and Synoptic Cumulative Impact Analyses," ERDC TN-WRAP-01-03 (2001).

[161] WRA 2014 Rule Comments, *citing* Upper Colorado River Endangered Fish Recovery Program, Razorback Sucker, http://www.coloradoriverrecovery.org/general-information/the-fish/razorback-sucker.html (last visited Oct. 8, 2014). "Juvenile razorback suckers have been collected in recent years from Old Charley Wash, a wetland adjacent to the Green River." U.S. FISH & WILDLIFE SERVICE, FINAL PROGRAMMATIC BIOLOGICAL OPINION ON THE *MANAGEMENT PLAN FOR THE ENDANGERED FISHES IN THE YAMPA RIVER BASIN* 30 (2005) (internal citation omitted).

[162] *Healdsburg*, 496 F.3d at 1001.

[163] *U.S. v. Cundiff*, 480 F. Supp. 480, 495 (W.D. Ky. 2007), *aff'd*, 555 F.3d. 200 (6th Cir. 2009).

[164] *Tilton*, 705 F.2d at 431 n.1.

2. *The Agencies' proposal defining "neighboring" to include waters with hydrological connections in determining adjacency is scientifically and legally sound.*

We support the agencies' proposed definition of "neighboring" to include waters located outside of the floodplain or riparian area of a tributary that are connected with such a tributary by a "shallow subsurface hydrologic connection or confined surface hydrologic connection to such a jurisdictional water." *See* 33 CFR 328.3(c)(2); 79 Fed. Reg. at 22207-22208.

Confined surface connections are "permanent, intermittent or ephemeral surface connections through directional flowpaths, such as (but not limited to) swales, gullies, rills, and ditches." 79 Fed. Reg. at 22208. Shallow subsurface hydrologic connections are described as "lateral water flow through a shallow subsurface layer, such as can be found, for example, in steeply sloping forested areas with shallow soils, or in soils with a restrictive layer that impedes the vertical flow of water, or in karst systems, especially karst pans." *Id*.

The agencies explain that both confined surface and shallow subsurface connections are "forms of direct hydrologic connections between adjacent waters and (a)(1) through (a)(5) waters," and propose that [w]aters, including wetlands, determined to have a shallow subsurface hydrologic connection or confined surface hydrologic connection to an (a)(1) through (a)(5) water would also be a "waters of the United States" by rule as adjacent waters falling within the definition of "neighboring.'" *Id.* at 22207.

Recognition of these hydrological connections between wetlands and other waters and "bordering, contiguous, or neighboring" jurisdictional waters is warranted by the scientific literature and resource management experience, as well as "the Act's text, structure, and purpose," and Justice Kennedy's concurring opinion in *Rapanos*.[165]

Also important is the clarification that the shallow subsurface connections are distinct from deeper groundwater connections in that "the former exhibit a direct connection to the water found on the surface in wetlands and open waters …. and "[w]hile they may provide the connection establishing jurisdiction, these shallow subsurface flows are not 'waters of the U.S.'" 79 Fed. Reg. at 22208. Again, this is a scientifically sound principle in relation to the purposes of the CWA. [166]

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[165] *See, e.g.,* 79 Fed. Reg. at 22241-43; *Connectivity Report* at 1-7 to 1-14 (The scientific evidence also demonstrates that shallow groundwater connections serve as hydrologic connections between surface waters and should be considered in assessing connectivity and effects on downstream waters.). *See also, Rapanos, supra*, 547 U.S. 759, 776 (J. Kennedy concurring opinion; *Northern Cal. River Watch v. City of Healdsburg*, 496 F.3d 993, 997-1001 (9th Cir. 2007) (constant ground water flow between river and pond makes pond jurisdictional under 33 C.F.R. § 328.3(b)); *Idaho Rural Council v. Bosma*, 143 F. Supp. 2d 1169, 1180 (D. Id. 2001) ("[T]he interpretive history of the CWA only supports the unremarkable proposition with which all courts agree – that the CWA does not regulate 'isolated/nontributary' groundwater which has no effect on surface water. It does not suggest that Congress intended to exclude from regulation discharges into hydrologically connected groundwater which adversely affect surface water. For these reasons, the Court finds that *the CWA extends federal jurisdiction over groundwater that is hydrologically connected to surface waters that are themselves waters of the United States*.") (emphasis added) (citations omitted).

[166] *See, Healdsburg*, 496 F.3d at 1000 (citing to underground hydrologic connections as a basis for establishing a significance nexus between two bodies under Justice Kennedy's standard); *United States v. Banks*, 115 F.3d 916,

3. *The Agencies' consideration of options for additional precision in defining "neighboring" should be informed by science and should not place undue emphasis on geographic proximity to the floodplain or tributary.*

While we generally support the proposed adjacency definition, we challenge the agencies' emphasis on physical proximity in determining adjacency. The ecological interconnections that demonstrate adjacency are based on wetland functions that are, at most, indirectly related to physical proximity. Physical adjacency, like isolation, is largely a legal construct and an artificial distinction not grounded in hydrology or aquatic ecology.

We respect the agencies' effort to provide additional precision in order to reduce uncertainty "as to whether a particular water connected through confined surface or shallow subsurface hydrology is an 'adjacent' water." However, the agencies must not place undue emphasis on geographic proximity at the expense of waters that clearly function as part of the aquatic system. *See*, *e.g.*, 79 Fed. Reg. at 22208 *citing* 42 FR 37128, July 19, 1977. We urge the agencies to carefully consider the scientific literature, including the SAB Connectivity Peer Review Report, the draft Connectivity Report, and the agencies' Appendix A Science Summary, as well as the additional scientific literature and analysis submitted during the public comment period, as it considers its options for increased clarity.

More specifically, we believe the scientific literature supports the conclusion that "all waters connected through a shallow subsurface hydrologic connection or confirmed surface hydrologic connection" have at least the potential to have more than an insubstantial influence on the physical, chemical, and biological integrity of tributaries "regardless of distance" and therefore should be found jurisdictional as adjacent waters. *See* 79 Fed. Reg. at 22207-08, 22241-43; *Connectivity Report* at 1-7 to 1-14 (The scientific evidence also demonstrates that shallow groundwater connections serve as hydrologic connections between surface waters and should be considered in assessing connectivity and effects on downstream waters.). **Therefore, we strongly oppose the following proposed options to the proposed rule described at 22208-09 as clearly inconsistent with the scientific literature and the goals of the CWA:**

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921 (11th Cir. 1997) (finding that wetlands that were at least one half mile from navigable waters were jurisdictional due to a hydrologic connection that "was primarily through groundwater, but also occurred through surface water during storms"); *United States v. Tilton*, 705 F.2d 429 (11th Cir. 1983) (finding that wetlands with rare surface water connections, but demonstrated ecological and subsurface hydrological connections, were jurisdictional); *see also, Idaho Rural Council v. Bosma,supra, note 164Quivira v. EPA*, 765 F.2d 126 (10th Cir. 1985) (arroyo with continuous groundwater connection and occasional surface water connection to downstream jurisdictional waters protected under the Act); *Washington Wilderness Coalition v. Hecla*, 870 F. Supp. 983, 990 (E.D. Wash. 1994) ("[S]ince the goal of the CWA is to protect the quality of surface waters, any pollutant which enters such waters, whether directly or through groundwater, is subject to regulation by NPDES permit."); *Sierra Club v. Colorado Refining Company*, 838 F. Supp. 1428, 1434 (D. Colo. 1993) (where the Judge stated that, "I conclude that the Clean Water Act's preclusion of the discharge of any pollutant into 'navigable waters' *includes such discharge which reaches 'navigable waters' through groundwater*.") (emphasis added) (citations omitted); *McClellan Ecological Seepage Situation v. Weinberger*, 707 F. Supp. 1182, 1196 (E.D.Ca. 1988), *vacated and remanded on other grounds, M.E.S.S. v. Perry*, 47 F.3d 325 (9th Cir. 1995), *cert. denied*, 516 U.S. 807 (1995) (where the Court found that discharges to groundwater could be regulated under the Act if "discharges from the waste pits have an effect on surface waters of the United States" and it could be established that the groundwater was "naturally connected to surface waters that constitute 'navigable waters' under the Clean Water Act").

- We oppose "asserting jurisdiction over adjacent waters *only if they are located in the floodplain or riparian zone of a jurisdictional water."*

- We oppose "considering only confined surface connections but not shallow surface connections for purposes of determining adjacency."

- We oppose establishing *by rule* "specific geographic limits for using shallow subsurface or confined surface hydrologic connections as a basis for determining adjacency…."

- We oppose adding specific language to the "neighboring" definition that waters connected by shallow subsurface or confined surface hydrologic connections to an (a)(1) through (a)(5) water must be geographically proximate to the adjacent water.

We note that the proposed rule currently recognizes that the agencies' longstanding definition of adjacency "includes an element of reasonable proximity." *Id.* at 22208. The agencies' proposal currently and appropriately explains this element of reasonable proximity as:

> … informed by the scientific literature, supplemented by agency practice, which leads to a recognition of the role of hydrologic connections in supporting a significant chemical, physical, and biological relationship between waters bodies, but this relationship can be reduced as the distance between water bodies increases. The agencies recognize that in specific circumstances, the distance between water bodies may be sufficiently far that even the presence of a hydrologic connections may not support an adjacency determination.

Any further limitations on adjacency based on geographic proximity should be developed through tailored guidance, consistent with the scientific evidence.

C. The agencies should determine adjacency on the basis of functional relationships, not proximity to (a)(1) through (a)(5) waters.

As noted above, defining and determining adjacency based on geographic proximity alone is not consistent with the scientific literature or the goals of the CWA. Instead, the adjacency definition and preamble should focus on adjacency based on functional relationships. The SAB advised as much in their September 30 letter to the Administrator regarding the scientific basis for the proposed rule:

> [I]mportantly, the available science supports defining adjacency or determination of adjacency on the basis of *functional relationships, not on how close an adjacent water is to a navigable water*. The Board also notes that local shallow subsurface water sources *and regional groundwater_sources* can strongly affect connectivity. Thus, the Board advises the EPA that adjacent waters and wetlands should not be defined solely on the basis of geographical proximity or distance to jurisdictional waters. *(emphasis added).*

We agree with science-focused comments submitted by Ducks Unlimited that "functionally

'adjacent wetlands' can be physically distant from navigable waters (just as a jurisdictional surface tributary may be located many miles upstream of a navigable water), yet its direct functional linkage to (i.e., its significant nexus with) the navigable water for purposes of maintaining the integrity of the navigable water would remain the central element of the jurisdictional decision."

The scientific evidence for this position includes the following:[167]

- Simulation of regional groundwater flow systems in Stutsman and Kidder counties, North Dakota, portrayed lateral movement of groundwater flow over 27 km that discharge into Pipestem Creek (Winter and Carr 1980).

- Novacek (1986) stated that sandhills and associated wetlands in Nebraska (including wet meadows) are important to water table and aquifer recharge, with the region containing five principal drainage basins that all ultimately empty into the Platte and Missouri rivers, thus creating a significant nexus between wetlands and navigable waters, even though the wetlands were not in physical proximity to the jurisdictional waters.[168]

- There exists a significant nexus between physically non-proximate waters and traditional navigable waters is Nebraska's Platte River and its tributaries in Colorado (South Platte River) and Wyoming (North Platte), an area covering 23,000 sq. mi. The Platte River provides important habitat for four federally listed threatened and endangered species. Large amounts of surface water have been diverted from this river system for irrigation and other purposes all along the system, and the effects of this diversion on the river have been significant enough to cause the Platte River in Nebraska to occasionally run dry (e.g., in 2003).

- Tiner et al. (2002) indicated that most sandhill wetlands are interconnected with the local groundwater and the agriculturally important Ogallala, or High Plains, aquifer. Furthermore, Weeks and Gutentag (1984) stated that groundwater from this aquifer discharges naturally into flowing streams and springs, and that the aquifer and valley-fill deposits and associated streams comprise a stream-aquifer system that links the High Plains aquifer to surface tributaries of the Platte, Republican and Arkansas rivers.

We agree with Ducks Unlimited that while physical proximity is an important component of adjacency, distance should not override reasonable evidence of the functional connections that provide for a significant nexus. We strongly support the SAB's recommendation that the definitions associated with adjacent waters be revised to recognize the scientifically demonstrated functional relationships that provide for a significant nexus.[169] We share the concern about the agencies' statement that, *"a determination of adjacency based on shallow subsurface or confined surface hydrologic connection outside the riparian area of*

[167] Excerpted from Ducks Unlimited 2014 Rule Comments.

[168] This example also demonstrates that "adjacent waters" and "geographically isolated" waters represent a continuum as opposed a simple dichotomy.

[169] SAB Rule Report, *supra*, at 2-3.

floodplain requires clear documentation." Depending upon its application, the "clear documentation" requirement may go beyond what is available for field jurisdictional determinations, and may go beyond Justice Kennedy's expectation that the regulation *"rests upon a reasonable inference of ecologic interconnection."* 547 U.S. at 780.

We recognize there is variability across ecoregions and landscapes such that there are some ecoregions or landscapes in which the soils, geology, and other characteristics would lead to the reasonable inference that functional adjacency would not extend very far from the jurisdictional water. We concur with Ducks Unlimited that:

> [t]his variability in the relationship between distance and the reasonable inference of a significant nexus provides another indication of the benefits of doing *a priori* significant nexus assessments of at least some of the Nation's key ecoregions. These *a priori* analyses would allow identification, by rule, of those ecoregions for which a presumption of significant nexus between its wetlands, in the aggregate, and other jurisdictional waters would be reasonable, and thereby also provide a greater degree of clarity, certainty, and predictability regarding CWA jurisdiction within those landscapes.

D. The Agencies' proposed "adjacent waters" provision improves the term's clarity by deleting the confusing phrase "other than waters that are themselves wetlands."

We support the agencies' proposal to delete from the existing "adjacent wetlands" provision the parenthetical phrase "other than waters that are themselves wetlands." 79 Fed. Reg. at 22209. The application of this phrase has always been unclear and confusing in practice and, as the agencies note, has at times been applied to exclude from CWA jurisdiction wetlands that were in fact adjacent to tributaries. *Id.* The proposed definition of adjacent waters provides a much clearer and scientifically sound basis for determining jurisdiction based on adjacency to tributaries.

E. The 2003 *SWANCC* and 2008 *Rapanos* guidances have put millions of adjacent wetland acres at risk and must be replaced with a scientifically and legally sound waters of the U.S. rule.

The 2003 and 2008 Guidances, and their application in the field, have put millions of adjacent wetlands at risk through a combination of flawed guidance and bad calls in the field. Here are just a few examples:

Forested wetlands, Coastal South Carolina – Corps determinations in 2002, 2003, and 2005 each found this 32-acre wetland site "isolated," with no surface water connection to nearby tributaries, and therefore not subject to Clean Water Act jurisdiction due to *SWANCC* and the *SWANCC* Guidance.[170] It was not until a citizen suit challenged the Corps' 2005 non-jurisdictional

[170] Charleston District, Army Corps of Engineers, Memorandum to Assert Jurisdiction for SAC 2005-41222-3JI (f.k.a. 87-2005-0575-3 Spectre LLC) (November 1, 2010) (2010 Spectre LLC Jurisdiction Memorandum) at 1. *See also,* Earthjustice, et al. *Courting Disaster: How the Supreme Court Has Broken the Clean Water Act and Why Congress Must Fix It.* (April 2009), at 5-6; Connolly, Kim D., *The Effects of the SWANCC* and *Rapanos* Supreme

determination that the Corps and EPA conducted a series of field inspections that confirmed that the wetlands site was, in fact, adjacent to a tributary that ultimately flowed to a TNW, Collins Creek. In November 2010, the Corps ultimately found this adjacent wetland jurisdictional, documenting that this wetland, in combination with similarly situated adjacent wetlands identified along the tributary reach, had a significant nexus with a TNW-Collins Creek. This 2010 significant nexus analysis confirmed jurisdiction despite the fact that the aggregation of wetlands was artificially limited to the stream reach due to the constraints of the existing flawed guidance.[171]

Forested wetlands, Coastal Georgia – Following *SWANCC,* the Corps accepted a mining company assertion that it did not a permit to destroy over 300 wetland acres in the Satilla River basin near the Okefenokee Swamp because those wetlands were "isolated" from other wetlands by a dirt road. It was left to environmental groups to demonstrate that many of the wetlands drained into a working culvert that went under a dirt road and linked the 300 acres of wetlands to other waterways downstream. Only after months of communications and the threat of litigation did the Corps finally reverse its non-jurisdictional determination. [172] Careful implementation of the Corps' adjacency definition pursuant to this rule should prevent the wasted time and resources, as well as the potential wetland loss, associated with this flawed non-jurisdictional determination.

Sedge wetlands, Eastern Front Range, Colorado – In 2007, the Corps found "isolated" and non-jurisdictional a series of wetlands because they were geographically cut off from their historic Little Dry Creek drainage by a small low-level dam. This example is not an isolated one, but part of a pattern of similar non-jurisdictional determinations along the eastern front range.[173] "[O]ften the difference between wetlands receiving CWA protection or not depends on whether they abut a RPW or a TNW. If they do not, under current Corps practices, they likely will be designated non-jurisdictional *regardless of whether they may be in the same floodplain or drainage and providing many if not all of the same functions."* (emphasis added).[174] A functional approach to adjacency in the final rule should require a more careful consideration of these wetlands and their likely ground water recharge, flood flow retention, and wildlife connections within the floodplain and the watershed.

Adjacent wetland, West Tennessee – In 2007, the Corps found non-jurisdictional a wetland that existed "only feet" from the confluence of the Reelfoot, North Reelfoot, and Cane Creek streams

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Court Rulings on South Carolina Waters, at 4-6 (2010) (prepared for National Wildlife Federation, Trout Unlimited, and Ducks Unlimited).

[171] *Id.* at 2-8.

[172] *Courting Disaster* at 13. *See also, Courting Disaster* at 20 *citing* EPA and Corps Memorandum to Assert Jurisdiction for SAS-2007-670 (February 12, 2008) (Agencies ultimately reversed non-jurisdiction determination for barrier island interdunal freshwater wetlands later found to be part of a connected interdunal system and hydrologically connected to the tidal Julienton and Little Mud Rivers.)

[173] Buechler, Dennis, *Five Case Studies on the Effects of the SWANCC and Rapanos Supreme Court Rulings on Colorado Wetlands and Streams*, at 19-22 (prepared for National Wildlife Federation, Trout Unlimited, and Ducks Unlimited) (February 2010).

[174] *Id.* at 22.

that flow through the Reelfoot National Wildlife Refuge.[175] "Given the proximity of the contested wetland to the stream, the destruction of the wetland site and loss of the wetland's water quality functions could significantly impact the stream and the refuge by introducing pollutants into the waterways."[176]

IX. The Final Rule should define categories of non-adjacent waters as "waters of the United States" where the scientific evidence of connectivity satisfies Justice Kennedy's Significant Nexus Test.

A. The proposed rule significantly limits the scope of jurisdictional "other waters," is far more restrictive than the limits set by the Supreme Court, ignores the scientific evidence of connectivity, and runs counter to the goals of the Clean Water Act.

As the agencies recognize, the "other waters," (a)(3) provision of the regulations remains in effect. The SWANCC decision specifically addressed only the presence of migratory birds as a basis for asserting jurisdiction, and not the validity of the (a)(3) provisions generally.[177] It is simply incorrect to assert the *SWANCC* Court held that any *category* of waters, other than the specific ponds at issue in the case, was outside of the government's Clean Water Act jurisdiction. The *SWANCC* Court merely held the Corps could not assert jurisdiction over waters based solely on the migratory bird test. The Court did *not* hold isolated waters could not be regulated under the Clean Water Act when there are other bases for jurisdiction.

We agree with the agencies' basic premises that "current regulations assert jurisdiction more broadly," than the proposed rule, and that the Supreme Court decisions in *SWANCC* and *Rapanos* placed limits on the scope of "other waters" that may be determined to be jurisdictional.79 Fed. Reg. at 22212. As the agencies note, Justice Kennedy explained the Court's *SWANCC* decision, and the limits on the scope of "other waters" it articulated, as follows: "In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers,* 531 U.S. 159 (2001) *(SWANCC),* the Court held, under the circumstances presented there, that to constitute 'navigable waters' under the Act, a water or wetland must possess a 'significant nexus' to waters that are or were navigable in fact or that could reasonably be so made." *Id. citing* 547 U.S. at 759.

The agencies properly read *SWANCC* and Justice Kennedy's concurring opinion in *Rapanos* as supporting the application of Kennedy's significant nexus standard to the "other waters" included in the agencies' long-standing definition of "waters of the U.S." and at issue in *SWANCC.*[178] Justice Kennedy, in his concurring opinion in *Rapanos,* stressed that hydrologically separated waters can collectively filter pollutants, prevent or reduce flooding and perform many other functions that may establish a "significant nexus" to other waters covered by the Act.[179] It follows from Justice Kennedy's *Rapanos* concurrence, when read in conjunction with the

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[175] Siedschlag, Greg, et al, *Five Case Studies on the Effects of the SWANCC and Rapanos Supreme Court Rulings on Tennessee Waterways*, at 9 (prepared for National Wildlife Federation, Trout Unlimited, and Ducks Unlimited) (January 2010).
[176] *Id.* at 10.
[177] *See* discussion of *SWANCC, supra, at* Section II.
[178] 33 C.F.R. § 328.3(a)(3); 40 C.F.R. § 230.3(s)(3); *see also* 40 C.F.R. § 122.2 ("waters of the U.S." (c)).
[179] *See* discussion of *SWANCC, supra, at* Section II.; *Rapanos, supra,* at 547 U.S. at 786.

Court's *SWANCC* decision, that Justice Kennedy would not dismiss protection of so-called isolated waters out-of-hand, but at the least protect those that have a significant nexus to TNWs and IWs.

We agree that if an "other water" is demonstrated to have a significant nexus to a TNW or IW, then it also (easily) satisfies the current regulatory requirement that the water is one "the use, degradation or destruction of which could affect interstate or foreign commerce." [180]

However, the agencies' proposal to require case-specific significant nexus determinations for all "other waters" goes far beyond the limits set by *SWANCC* and *Rapanos*, and ignores the scientific evidence in the record. 79 Fed. Reg. at 22212. This case-specific requirement for all "other waters" effectively creates a seriously flawed regulatory presumption that all "other waters" lack a significant nexus with TNWs, IWs, and territorial seas, and have no influence on the integrity of these waters. This presumption ignores the scientific evidence of connectivity that is in the rulemaking record.

For example, the SAB's review of the proposed rule finds:

> There is also adequate scientific evidence to support a determination that certain subcategories and types of 'other waters' in particular regions of the United States (e.g., Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, western vernal pools) are similarly situated (i.e., they have a similar influence on the physical, biological, and chemical integrity of downstream waters and are similarly situated on the landscape) and thus could be considered waters of the United States. Furthermore, as the science continues to develop, other sets of wetlands may be identified as 'similarly situated.'
> SAB Rule Letter at 3.

As explained more fully below, there exist numerous categories of non-adjacent "other waters" that are "similarly situated," satisfy the significant nexus test, and warrant inclusion in the list of waters that are jurisdictional by rule.[181] And there is no basis in law or science for categorically

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[180] *See e.g.*, Kennedy concurring opinion at 547 U.S. 782 *quoting Oklahoma ex rel Phillips* v. *Guy F. Atkinson Co*., 313 U.S. 508, 524-525 (1941)("[T]he exercise of the granted power of Congress to regulate interstate commerce may be aided by appropriate and needful control of activities and agencies which, though intrastate, affect that commerce"). Justice Kennedy also indicates that regulation of waters having significant nexus are well within the Congress's authority and waters that meet the significant nexus test avoid any federalism or constitutional concerns: In *SWANCC*, by interpreting the Act to require a significant nexus with navigable waters, the Court avoided applications-those involving waters without a significant nexus-that appeared likely, as a category, to raise constitutional difficulties and federalism concerns. *Rapanos*, 547 U.S. at 776.

[181] Most so-called isolated waters are currently regulated under the provision of Corps and EPA regulations that protect "other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce." *See*, *e.g.*, 33 C.F.R. § 328.3(a)(3). Many waters, such as prairie potholes, covered under this provision have enormous impacts on the chemical, physical, and biological integrity of traditionally navigable waters and, when viewed collectively, clearly have a "significant nexus" to traditionally navigable waters. *See*, *e.g.*, United States Geological Survey, Northern Prairie Wildlife Research Center, *Prairie Basin Wetlands in the Dakotas: A Community Profile*, *available a*t

excluding some or all "other waters" from CWA jurisdiction absent proof that such other waters lack any more than a speculative or insubstantial effect on TNWs, IWs, or territorial seas.

1. *The single point of entry watershed is a reasonable basis for interpreting "in the region" for purposes of aggregating "other waters" to determine their collective effect on the nearest TNW, IW, or territorial sea.*

We agree with the agencies' science-based rationale for proposing the single point of entry watershed as a minimum "region" and basic scale at which to aggregate "other waters" to determine their collective effect on the nearest TNW, IW, or territorial sea. Watersheds are the logical starting point for defining a "region."79 Fed. Reg. at 22212. The "single point of entry" watershed is a reasonable, albeit in our view conservative, starting point for delineating the "region" in which similarly situated waters are to be identified and assessed.

Justice Kennedy's choice of the Gulf of Mexico's hypoxic zone as an example of the type of water quality issue that the CWA is intended to address should shed some light on the scale of the "region" that should be used to assess aggregate impacts. His example illustrates that a single point of entry watershed will in many cases be too small to appropriately and efficiently assess aggregate impacts of wetlands similarly situated within a region such that the objectives of clarity, certainty, and predictability are achieved. In many cases, the level of the ecoregion will likely be the best scale at which to examine many aggregated wetlands, such as the prairie potholes.

2. The single point of entry watershed approach should provide for more flexible application where region-specific science warrants.

We support the allowance for some flexibility in the use of watershed-based analyses by field staff. We believe that additional flexibility would in many cases be scientifically justified, would in those cases be consistent with Justice Kennedy's perspective on what constitutes a "region," would lead toward greater clarity and certainty, and would provide the basis for a much more effective and efficient process.

For example, we agree with Ducks Unlimited's suggestion that a combination of watersheds and physiographic or ecoregions be used to delineate groups of watersheds that could be scientifically viewed as sufficiently similar to constitute a "region."[182] In a significant number of situations, the "single point of entry" watershed to a TNW or IW will cause work, i.e., jurisdictional determinations, to be unnecessarily repeated for adjacent watersheds when the wetland, riverine, and other land use conditions for adjacent watersheds would be largely indistinguishable. We adopt here Ducks Unlimited's scientific observation that there are many instances in which a watershed at this single point of entry scale will be, in terms of key characteristics such as topography, soils, land use, and many of the characteristics of the watershed's wetlands and other water bodies, "very similar, and in some cases almost

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http://www.npwrc.usgs.gov/resource/wetlands/basinwet/ (last modified Aug. 24, 2006) (describing the various important functions prairie potholes provide).

[182] *See* Ducks Unlimited 2014 Rule Comments.

indistinguishable, from neighboring watersheds." Ducks Unlimited 2014 Rule Comments *citing* Lorenz et al 2010. Ducks Unlimited offers the example of numerous neighboring single point of entry watersheds along the Red River of the North between North Dakota and Minnesota that "exhibit strong similarities in almost every respect." *Id.*

We agree with Ducks Unlimited's recommendation that the agencies review neighboring watersheds to determine if they are similar enough to the one at issue in a case-specific analysis of "other waters" to warrant aggregation of more than one watershed in conducting the analysis. *Id.* at 29. We agree that combining adjoining watersheds where they exhibit such strong similarities should lead to greater administrative efficiencies, improved clarity and certainty, and more scientifically sound significant nexus analyses.

We recognize the added efficiency of agency direction that if a significant nexus has been established for one water *in the watershed*, then other similarly situated waters *in the watershed* would also be found to have a significant nexus. This approach is consistent with Justice Kennedy's conclusion that "[w]here an adequate nexus is established for a particular wetland, it may be permissible, as a matter of administrative convenience or necessity, to presume covered status for other comparable wetlands in the region." [183]

We agree with Ducks Unlimited's analysis that it would be more efficient, more consistent, more certain, and at least as scientifically and legally sound to bundle very similar watersheds within a physiographic region or ecoregion where the science establishes strong similarities and treat them as a "region." This approach would allow for significant nexus determinations to apply across these multi-watershed regions rather than needlessly replicating them watershed-by-watershed despite their similarities. This would significantly increase the efficiency, and ultimately the certainty, of the review and permitting process.

3. *The agencies must reject and withdraw the 2008 Guidance's flawed and harmful stream segment approach to aggregation.*

The agencies' must reject and withdraw the 2008 Guidance's flawed stream segment limitation on the aggregation of wetlands and other waters in the watershed. While the scientific evidence in the record overwhelmingly demonstrates the cumulative significant impacts upper reach streams have on downstream water integrity,[184] the 2008 Guidance allows for aggregation of wetlands associated with a particular tributary,[185] defining tributary so narrowly that the scope of consideration will often be exceedingly small, especially in the upper reaches of the tributary

[183] *Id*. at 2249.

[184] *See, e.g.*, Meyer, J. L. et al., *Where Rivers Are Born: The Scientific Imperative for Defending Small Streams and Wetlands,* American Rivers and Sierra Club, publishers (Sept. 2003) *available at* http://www.americanrivers.org/site/DocServer/WhereRiversAreBorn1.pdf?docIDC=182 (describing in detail the important links between headwaters and downstream waters); Downing, Donna, Tracie-Lynn Nadeau, and Rose Kwok, *Technical and Scientific Challenges in Implementing Rapanos' "Water of the United States,"* American Bar Association, NATURAL RESOURCES AND ENVIRONMENT, 42, Vol. 22, No, 1, (Summer 2007) at 43 (stating, "The small size of headwater streams means that, in such waters, more water is in direct contact with the streambed and its associated subsurface flows (hyporheic zone), where most processing [to remove pollutants] takes place. Thus, headwaters as a category can have a disproportionate positive effect on the integrity of downstream waters.").

[185] Guidance, *supra*, at 7.

system. This approach has led to many waters being unprotected that would clearly be protected if a broader, and scientifically supported, view of aggregation of wetlands were used. For example, a report noted a study that found that in eight northeastern watersheds wetlands associated with the first order streams in those watersheds accounted for ninety percent of phosphorous removal in the watersheds.[186] The aggregate impact of those wetlands on downstream waters is clearly significant. However, wetlands associated with only one small first order headwater stream are likely to only account for a scintilla of such benefits, and their impacts on downstream waters would be much more likely to be found insubstantial in isolation.

In addition, the current crabbed approach to aggregation has made it excessively burdensome, expensive, and impractical to gather meaningful information on the impacts of wetlands associated with a small stream segment, or on a stream segment itself, in order to demonstrate the "significant nexus" such waters have to TNWs.

B. In categorizing waters as "similarly situated" the final rule should focus on the similar functions of non-adjacent water bodies in the region and less on proximity to TNWs, IWs, and territorial seas.

The agencies' proposed definition of "significant nexus" states that other waters, including wetlands:

> … are similarly situated when they perform similar functions and are located sufficiently close together or sufficiently close to a "water of the United States" so that they can be evaluated as a single landscape unit with regard to their effect on the chemical, physical, or biological integrity of a water identified in paragraphs (a)(1) through (3) of this section.
> 33 CRF 328.3 (c)(7).

We strongly agree with the agencies rationale for aggregation of similarly situated waters, based on Justice Kennedy's standard:

> Since the focus of the significant nexus standard is on protecting the chemical physical, and biological integrity of the nation's waters, the agencies propose to interpret the phrase 'similarly situated' in terms of whether the functions provided by the particular 'other waters' are similar and, therefore, whether such 'other waters' are collectively influencing the chemical, physical, or biological integrity of downstream waters. There are many functions of waters that might demonstrate a significant nexus, such as sediment trapping, nutrient recycling, pollutant trapping and filtering, retention or attenuation of flood waters, runoff storage, and provision of habitat. *See* 547 US at 775, 779-80. This approach is consistent not only with the significant nexus standard, but with the science of aquatic systems.
> 79 Fed. Reg. at 22261.

We question, however, the agencies' imposition of functional similarity and proximity requirements that seem more complicated, confusing, and more stringent than called for by

[186] Meyer, et al., *Where Rivers Are Born*, *supra*, at 14.

Justice Kennedy's use of the term "similarly situated." We agree with Ducks Unlimited that most wetlands in an appropriately sized and delimited 'region' will generally perform many of the same functions and overall, a scientifically valid and more efficient method of aggregating wetlands falling within the classification of 'other waters' would be to evaluate them all in a simple direct, comprehensive aggregation within the appropriate region. Ducks Unlimited 2014 Rule Comments at 27-28.

We also join Ducks Unlimited in objecting to the agencies' proposal to inject wetland density or proximity to a water of the U.S. as criteria for finding other waters to be "similarly situated" and therefore able to be considered in the aggregate for a case-specific significant nexus evaluation. *Id.* at 28. While function, proximity, and density are important factors for assessing the ultimate significant nexus with waters of the U.S., these factors are not central to the determination of which wetlands in a region qualify as being "similarly situated" and therefore eligible for aggregation. "Similarly situated" wetlands and waters should be categorized based on their ecological function, and not their physical proximity. Indeed, Justice Kennedy acknowledged as much: "Given the role wetlands play in pollutant filtering, flood control, and runoff storage, it may well be the absence of hydrologic connection (in the sense of interchange of waters) that shows the wetlands' significance for the aquatic system." 547 U.S. at 786.[187]

While the science reflects some correlation between aquatic function and distance, the degree and direction of that correlation is highly variable and not a reliable surrogate for a functional analysis. The SAB's Connectivity Peer Review Report recognizes as much in its critique of the draft Connectivity Report's limited analysis of the scientific evidence of connectivity with respect to non-floodplain wetlands and waters. SAB Connectivity Peer Review Report at 6. The SAB concludes that: "[t]he scientific literature provides ample information to support a more definitive statement (*i.e., numerous functions of non-floodplain waters and wetlands have been shown to benefit the physical, chemical, and biological integrity of downgradient waters*)." (*emphasis added*). *Id.* The SAB recommends that the EPA revise the conclusion to focus on what is supported by the scientific literature and articulate the specific knowledge gaps that must be resolved (e.g., degree of connectivity, *analyses of temporal or spatial variability*). *Id.* And the SAB recommends that the Final Connectivity Report's key findings concerning non-floodplain waters and wetlands should address: *the biological functions and biological connectivity of non-floodplain wetlands*; differences between natural and manmade wetlands; *the importance and temporal dynamics of spatial proximity as a determinant of connectivity; and the importance of cumulative or aggregate impacts of non-floodplain wetlands."* (*emphasis* added) *Id.*

As our summary of scientific evidence below and comments elsewhere in the administrative record document, we believe that there is a compelling scientific basis for treating as a group of "similarly situated" wetlands those wetlands and other waters that have similar characteristics and serve similar aquatic ecosystem functions in the same region.

[187] *See also,* 547 U.S. at 775 ("it may be the absence of an interchange of waters prior to the dredge and fill activity that makes protection of the wetlands critical to the statutory scheme.").

C. The agencies' definition of significant nexus is legally and scientifically sound.

We support the agencies' definition of significant nexus, which closely tracks Justice Kennedy's definition in his *Rapanos* opinion:

> The term significant nexus means that a water, including wetlands, either alone or in combination with other similarly situated waters in the region (i.e., the watershed that drains to the nearest water identified in paragraphs (a)(1)through (3) of this section), significantly affects the chemical, physical, or biological integrity of a water identified in paragraphs (a)(1) through (3) of this section. For an effect to be significant, it must be more than speculative or insubstantial…."
> 33 CFR 328.3 (c)(7); *See also*, 79 Fed. Reg. at 22213, 22262.

We agree, in particular, that Justice Kennedy used the term "significant" with respect to significant nexus to mean "more than speculative or insubstantial." 79 Fed. Reg. 22213 *citing Rapanos* at 547 U.S., at 780. We agree that Justice Kennedy remanded the *Carabell* and *Rapanos* cases because the agencies had not properly applied the controlling legal standard – whether the wetlands at issue had a significant nexus. We agree that Justice Kennedy concluded that "[m]uch the same evidence should permit the establishment of a significant nexus with navigable-in-fact waters…." And that he "was concerned that the evidence of connectivity in the *Carabell* case before the Court contained "conditional language" such as "potential ability" and "possible flooding" that "could suggest an undue degree of speculation." *Id*. 22262, *citing Rapanos* at 547 U.S., at 786.

As the agencies note, functions of waters that may demonstrate a significant nexus include "sediment trapping, nutrient recycling, pollutant trapping and filtering, retention or attenuation of flood waters, runoff storage, export of organic matter, export of food resources, and provision of aquatic habitat." 79 Fed. Reg. at 22213-22214. We agree that water functions demonstrating a significant nexus *in the absence of hydrologic connection* include retention of flood waters or pollutants that would otherwise flow downstream to the TNW, IW, or territorial sea. *Id. citing* 547 U.S. at 775. For scientific support for this point, the agencies cite to the Draft Connectivity Report at 5-26 *citing* A. Bullock and M. Acreman, "The Role of Wetlands in the Hydrological Cycle," *Hydrology and Earth System Sciences* 7:358-389 (2003)).

In considering the significance of a nexus between other waters and downstream waters, we urge the agencies to consider the nature of the pollutants (e.g., water soluble toxic chemicals) that could be discharged to a non-adjacent waterbody and could adversely impact downstream waters and water supplies. While it might take years for the pollutant to be carried through groundwater to a river, ultimately those toxic chemicals could threaten water supplies or otherwise degrade the chemical and biological health of a TNW or IW. *See* Ducks Unlimited's 2014 Rule Comments at 26-27 (illustrating the point with the example of a 2013 Exxon crude oil pipeline spill to wetlands and inlets adjoining a popular fishing and recreation lake where Exxon used the failure to prove "waters of the U.S." in an effort to avoid clean up liability).

We strongly agree with the agencies that a clear distinction must be drawn between the conditional language suggesting undue speculation that concerned Justice Kennedy and the very

different conditional language often used by scientists to avoid speculation; the "rigorous and precise language of science necessary when applying specific findings in another individual situation or more broadly across a variety of situations." Indeed, words like "potential" may have a meaning that is not speculative at all, but may mean definitively that an ability or capability (e,g., a wetland function) is expected to occur under designated circumstances. 79 Fed. Reg. at 22262.

In light of these crucial differences between the language of law and science, the final rule should explain more clearly how Justice Kennedy's legal language should be used in the science-based connectivity analysis that will be conducted for "other waters." We agree with the SAB recommendation that "the EPA clarify in its general communications and in the preamble to the final rule that 'significant nexus' is a legal term, not a scientific term." SAB Rule Letter at 4.

Along these lines, we encourage the agencies to include in the final rule preamble additional clear guidance regarding the extent to which the science related to wetland/water functions, (e.g., water storage, nutrient recycling, maintenance of base flows) can be generalized and applied to significant nexus analyses of "other waters" in ecoregions and/or watersheds beyond the one in which a particular set of research was conducted. We agree with and support the agencies preamble language on this subject at 79 Fed. Reg. 22214, including, in particular, the agencies statement that, "[s]uch information need not always be specific to the water whose jurisdictional status is being evaluated. Regional and national studies of the same type of waters or similarly situated waters can help to inform a significant nexus analysis as long as they are applicable to the water being evaluated."

D. The final rule should define categories of "other waters" as "waters of the United States" based on the current scientific evidence of connectivity.

Recognizing that the case-specific analysis of significant nexus is "resource intensive for the regulating agencies and the regulated community alike," the agencies solicit information about whether "current scientific research and data regarding particular types of waters are sufficient to support the inclusion of subcategories of types of 'other waters,' either alone or in combination with similarly situated waters, that can appropriately be identified as *always lacking or always having a significant nexus*."

In this regard, we strongly agree with the SAB that:

1. "There is [] adequate scientific evidence to support a determination that certain subcategories and types of 'other waters' in particular regions of the United States … are similarly situated … and thus could be considered waters of the United States."
2. "Furthermore, as the science continues to develop, other sets of wetlands may be identified as 'similarly situated'….; and
3. "[T]he science *does not support excluding groups of 'other waters' or subcategories thereof.*

SAB Rule Letter at 3.

Where the science *currently available* is not considered in particular instances (based on case-specific review) to be sufficient to establish significant nexus, those waters would remain non-jurisdictional unless and until a significant nexus finding is warranted by a future analysis with additional scientific support. However, that lack of information currently should not be the basis for *permanently excluding* such waters from jurisdiction.

We join Ducks Unlimited in recommending that during the finalization of the rule, the agencies evaluate categories of "other waters" likely to have a significant nexus on an ecoregional basis and, "based on the available science and judgments of wetland and hydrologic experts, determine for which regions of the country the wetlands that exist therein should be designated as jurisdictional by rule." Ducks Unlimited 2014 Rule Comments at 22. These *a priori* case-specific analyses should be conducted by the agencies for major subcategories of "other waters" in the course of finalizing the rule.

We agree with the Ducks Unlimited analysis that this approach has numerous advantages, including:

- Increased clarity and certainty for landowners and regulators with respect to "other waters" located within those regions found to be jurisdictional by rule.

- Significant reduction of future administrative burdens associated with resource intensive case-specific analyses for "other waters" located within those regions found to be jurisdictional by rule.

- Scientifically sound recognition that the *current* scientific literature clearly supports findings of significant nexus in some regions, but may not *currently* support such findings in other regions.

- Providing for the documentation and accumulation of science-based significant nexus determinations over time.

These *a priori* analyses, supported by the breadth and depth of the scientific literature and expertise currently available to the agencies, would allow identification, by rule, of those ecoregions for which a presumption of significant nexus between its wetlands, in the aggregate, and other jurisdictional waters would be reasonable, and thereby also provide a greater degree of clarity, certainty, and predictability regarding CWA jurisdiction within those landscapes. As the agencies recognize, "[t]here is substantial value to the regulated public and all other stakeholders involved in providing increased certainty regarding which "other waters" are jurisdictional and which are not."[188] Categorical significant nexus determinations fulfill the purpose of the proposed rule because it allows the agencies to "better address the clarity, certainty, and predictability goals of this rule."[189] Therefore, the agencies should make categorical significant nexus determinations where possible in order to ease the administrative burden of the proposed rule on all stakeholders involved.

[188] 79 Fed. Reg. at 22216.
[189] *Id.*

The importance of providing for science-based, categorical – versus case-by-case -- findings of connectivity for categories of non-floodplain, non-adjacent waters cannot be overstated. The scientific evidence for such categorical findings exists and should be accurately reflected in the final Connectivity Report and the final rule. Case-specific significant nexus analyses are extremely time and resource intensive and simply impractical in many cases. Realistically, if left to case-by-case analysis, many non-adjacent other waters -- and their demonstrated ecological influence on downstream waters -- will continue to be discounted, degraded, and destroyed. The integrity of downstream waters will suffer as a result.

We acknowledge that even with these eco-region-based significant nexus findings and inclusion of categories of "other waters" as jurisdictional by rule, the final rule cannot and will not assert jurisdiction as broadly as the current (a)(3) regulations do.

E. The agencies have the legal authority to make a categorical determination for subcategories of "other waters" when a majority of those waters meet the significant nexus standard.[190]

Agencies have the authority to determine that a subcategory of "other waters" is "waters of the United States" when a majority of the waters in that subcategory meet the significant nexus standard. In *Rapanos*, Justice Kennedy stated "through regulation or adjudication, the Corps may choose to identify categories of [waters] that are likely, in the majority of cases, to perform important functions for an aquatic ecosystem incorporating navigable waters."[191] In the proposed rule, the agencies stated "Justice Kennedy's significant nexus standard provides a framework for establishing categories of waters which are *per se* 'waters of the United States."[192]

In *Rapanos*, Justice Kennedy stated that the Court's reasoning in *Riverside Bayview* "could apply equally to wetlands adjacent to certain major tributaries."[193] Justice Kennedy therefore provided a direct example of how the agencies could make a categorical significant nexus determination, based on the Court's holding in *Riverside Bayview*. His statement in the next sentence—that agencies could make categorical significant nexus determinations—repeats and clarifies his original argument.

In addition, the agencies have a longstanding practice of creating categories of waters defined as "waters of the United States." After initially construing "waters of the United States" to cover only waters navigable in fact, in 1975 the Corps issued interim final regulations redefining "the waters of the United States" to include not only actually navigable waters but also tributaries of such waters, interstate waters and their tributaries, non-navigable interstate waters whose use or misuse could affect interstate commerce, and all "freshwater wetlands" that were adjacent to

[190] This subsection is excerpted from, and incorporated here by reference to, the Southern Environmental Law Center's 2014 Rule Comments.
[191] 547 U.S. at 780.
[192] *See* 79 Fed. Reg. at 22209
[193] *Id.* at 780 *citing Riverside Bayview Homes*, 474 U.S. 121, 126, 134 (1985) (Supreme Court upheld the Corps' determination that wetlands adjacent to navigable waters were categorically "waters of the United States" based on the Corps' "reasonable inference of ecological interconnection" between the waters and the adjacent wetlands. The Court deferred to the Corps' judgment, stating that the Corps "provide[d] an adequate basis for a legal judgment [contained in 33 C.F.R. § 323.2(a)] that adjacent wetlands may be defined as waters under the Act."

other covered waters.[194] In 1977, the Corps formally adopted this regulation in 33 C.F.R. § 323.2(a). The Corp's and the EPA's current definition of "waters of the United States"— located in 33 C.F.R. § 328.3(a)—includes the categories listed in the 1977 regulation, as well as an assortment of "other waters" including wetlands and intermittent streams, the use or destruction of which could affect interstate commerce. In *United States v. Riverside Bayview Homes, Inc.* the Court upheld the Corps' categorical determination that wetlands adjacent to navigable waters were "waters of the United States" because, *inter alia*, Congress had acquiesced to the Corps' categorical determination.[195]

Finally, the agencies have made such categorical determinations of significant nexus in sections (5) and (6) of the proposed rule. In section (5) of the proposed rule, the agencies created a category of "tributaries" that are jurisdictional *per se*. As stated by the agencies in the proposed rule, "[w]hile Justice Kennedy's opinion focused on adjacent wetlands in light of the facts of the cases before him, the agencies determined it was reasonable . . . to undertake a detailed examination of the scientific literature to determine whether tributaries, as a category . . . significantly affect . . . navigable waters, interstate waters, or territorial seas."[196] The agencies studied the physical, chemical and biological impact of tributaries and concluded tributaries "significantly affect the chemical, physical, and biological integrity of traditional navigable waters, interstate waters, and the territorial seas."[197] Thus, the agencies concluded that "[t]ributaries . . . perform the requisite functions identified by Justice Kennedy for them to be considered, as a category, to be 'waters of the United States.'"[198]

The proposed rule clarifies that "small, intermittent, and ephemeral tributaries" meet Justice Kennedy's significant nexus standard because they are "essential components of the tributary network . . . when their functional contributions to the chemical, physical, and biological conditions of downstream waters are considered at a watershed scale."[199] Therefore, the agencies concluded that all "tributaries," including intermittent and ephemeral tributaries, are categorically "waters of the United States."[200]

Similarly, in section (6), the agencies concluded that "waters adjacent" to waters in sections (1) through (5) also have a "significant nexus" to traditional navigable waters and are categorically "waters of the United States." In *Rapanos*, Justice Kennedy approved the Corp's previous determination that "wetlands adjacent to traditional navigable waters are presumed to be jurisdictional waters" because the Corps previously made a "reasonable inference of ecological connection."[201] In the proposed rule, the agencies further concluded that adjacent waters have a significant nexus with territorial seas, impoundments, and tributaries because they are "likely, in

[194] 40 Fed. Reg. 31320 (July 25, 1975).
[195] 474 U.S. 121, 136 (citing 123 Cong. Rec. 39209 (1977) (Congressional efforts to narrow the definition of "waters" were abandoned and, in the words of Senator Baker, the Corps "retain[ed] the comprehensive jurisdiction over the Nation's waters exercised in the 1972 Federal Water Pollution control Act")).
[196] 79 Fed. Reg. at 22259.
[197] *Id.* at 22201.
[198] *Id.* at 22204.
[199] 79 Fed. Reg. at 22206.
[200] *Id.* at 22201.
[201] 547 U.S. at 780.

the majority of cases, to perform important functions for an aquatic system incorporating navigable waters."[202]

For all of the reasons stated above, the agencies have the legal authority to make a determination that certain subcategories of "other waters" have a significant nexus to traditional navigable waters, interstate waters, and territorial seas.

F. The agencies should determine by rule that "other waters" are similarly situated in certain areas of the country.

We support the agencies' proposed alternative #1 approach of determining by rule that "other waters" are similarly situated in certain areas of the country. 79 Fed. Reg. at 22215. We support the agencies' proposal to use Level III ecoregions as the appropriate scale for assessing the degree to which "other waters" are similarly situated. *Id*. As the agencies note, "[t]he 'other waters in these ecoregions are within a contiguous area of land with relatively homogenous soils, vegetation, and landform (e.g., plain, mountain, valley, etc), and generally provide similar functions to the downstream traditional navigable waters, interstate waters, or the territorial seas." *Id.* Using this approach, the agencies would aggregate as similarly situated the "other waters" in a single point of entry watershed in these identified ecoregions for purposes of assessing significant nexus.

This approach is scientifically sound and consistent with Justice Kennedy's significant nexus test. This approach would reduce administrative burdens and increase clarity and certainty since, as the agencies note, they "expect that determining all 'other waters' within an ecoregion to be similarly situated would result in these 'other waters' being determined to have a significant nexus and being found jurisdictional."

We also support the agencies' list of 25 Level III regions as a good starting point for a list of ecoregions "where waters are similarly situated and aggregation could be used." These 25 ecoregions contain well-known, important wetland systems that should be prioritized for a priori examination in the course of finalizing the rule. As The SAB Rule Letter to EPA states:

> *...there is also adequate scientific evidence to support a determination that certain subcategories and types of 'other waters' in particular regions of the United States (e.g., Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, western vernal pools) are similarly situated (i.e., they have a similar influence on the physical, biological, and chemical integrity of downstream waters and are similarly situated on the landscape) and thus are waters of the United States.*

The SAB's non-exclusive list of wetland systems above includes the following Level III ecoregions – all from the agencies' list of 25 -- that should be considered priorities for significant nexus analysis in the aggregate:

[202] 79 Fed. Reg. at 22210.

- 6 – Central California Foothills and Coastal Mountains
- 7 – Central California Valley
- 9 – Eastern Cascades Slopes and Foothills
- 34 – Western Gulf Coastal Plain
- 42 – Northwestern Glaciated Plains
- 46 – Northern Glaciated Plains
- 47 – Western Corn Belt Plains
- 48 – Lake Agassiz Plain
- 63 – Middle Atlantic Coastal Plain
- 65 – Southeastern Plains

The SAB's priority list of ecoregions includes several wetland systems of particular interest to our members and supporters as well as to Ducks Unlimited. These include the prairie pothole region, which is contained within ecoregions 42, 46, 47, and 48. The agencies' list of 25 high priority ecoregions includes additional ecoregions with important wetland systems, including the Nebraska Sandhills (ecoregion 44). We join Ducks Unlimited in urging the agencies to add ecoregion 44 to the above list of the highest priority ecoregions.

We also join Ducks Unlimited in suggesting that the agencies consider adding the following additional ecoregions to the larger list of 25 at 79 Fed. Reg. 22215:

- 25 – High Plains: This ecoregion contains the South Platte and portions of the Platte River system containing wetlands and other waters that are known to have shallow, subsurface connectivity with the rivers, and that are being managed to benefit maintenance of base flows in the rivers to benefit four federally listed threatened and endangered species as well as maintaining water supplies for irrigation and other interests.

- 53 – Southeastern Wisconsin Till Plains: This ecoregion, and the three that follow, adjoin the Great Lakes. In light of the high priority of these interstate/international waters, and the level of concern generated by an increasing number of high profile algal blooms and their relation to public health and welfare, as well as economic impacts, we suggest that these four Great Lakes ecoregions be added to the list.
- 56 – Southern Michigan / Northern Indiana Drift Plains
- 57 – Huron / Erie Lake Plains
- 61 – Erie Drift Plain

- 73 – Mississippi Alluvial Plain: This region was historically highly significant in terms of its wetlands and their importance to the Mississippi River and major tributaries. While many of the remaining wetlands should be found jurisdictional as adjacent waters, the remaining "other waters" in this ecoregion would most likely be considered similarly situated, and therefore suitable for aggregation for purposes of determining significant nexus.

We support the agencies' list of science-based factors used to develop the list of 25 ecoregions where waters are similarly situated and aggregation can be used. 79 Fed. Reg. at 22216. We agree that these factors appropriately relate to the primary question of whether waters in these ecoregions are similarly situated and subject to aggregation in determining significant nexus. However, we note that the list of factors, the draft Connectivity Report, and this proposed rule, seem to minimize biological factors and the biological component of the integrity of the Nation's waters. The SAB Connectivity Peer Review Report at 6 shared this concern and recommends more of an emphasis on biological factors in the Final Connectivity Report. Factor "f" at 79 Fed. Reg. 22216 relates to habitat function, but seems limited and not fully reflective of the scientific evidence of biological connectivity.

G. The agencies should determine by rule that certain "other waters" have a significant nexus and are jurisdictional by rule.

We also strongly support the alternative #2 proposal that the agencies determine by rule, based on the available science, that certain additional subcategories of "other waters" are similarly situated and have a significant nexus and are jurisdictional by rule rather than via the resource-intensive case-specific significant nexus analysis under paragraph (a)(7). 79 Fed. Reg. at 22216.

The SAB has already stated its position that the agencies have sufficient scientific evidence to support making certain subcategories of "other waters" jurisdictional by rule, including, but not limited to Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, and western vernal pools:

> [T]here is also adequate scientific evidence to support a determination that certain subcategories and types of 'other waters' in particular regions of the United States (e.g., Carolina and Delmarva Bays, Texas coastal prairie wetlands, prairie potholes, pocosins, western vernal pools) are similarly situated (i.e., they have a similar influence on the physical, biological, and chemical integrity of downstream waters and are similarly situated on the landscape) and thus are waters of the United States.
> SAB Rule Letter.[203]

As noted previously, we strongly believe that finding subcategories of others waters to be jurisdictional by rule, where supported by the available science, will significantly decrease the administrative burdens, uncertainty, inconsistency, and wasteful litigation by significantly reducing the circumstances requiring a case-specific significant nexus analysis.

H. The agencies should not categorically exclude from aggregation or jurisdiction "other waters" that are not located in these identified ecoregions.

We disagree with the suggestion that wetlands not located in these identified ecoregions or areas would necessarily "be determined to not be similarly situated." Such a determination is not necessarily supported by the current science and it would unnecessarily constrain future case-

[203] *See also*, 79 Fed. Reg. at 22216, *citing* Appendix A, Part II, iii. C (1).

specific analyses in a way that could potentially eliminate any role for emerging science. Some ecoregions could contain a wide diversity of relevant geologic and climatic attributes and include a range of wetland types that could not reasonably be considered to be "similarly situated." In such cases, the science may still support aggregation at the scale of a single point of entry watershed. Other ecoregions might simply contain a lower density of wetlands, but these wetlands may still be relatively similar in terms of their type, functions, and distribution across the landscape. The wetlands, in the aggregate, in some of these kinds of ecoregions might fail to rise to the level of being found jurisdictional by rule based on currently available scientific evidence. However, given that the relevant science continues to emerge, these wetlands could in the future be found to be jurisdictional as a result of a case-specific significant nexus analysis. **Therefore, those wetlands should by no means *"be determined to be not similarly situated"* on the basis that they are not located in identified ecoregions or other specified areas.**

We also disagree with the suggestion in alternative #2 that certain subcategories of waters would be determined to lack a significant nexus and therefore be permanently excluded from jurisdiction. As the SAB notes, "*the science does not support excluding groups of 'other waters' or subcategories thereof."* SAB Rule Letter at 3. The final rule and preamble must clearly distinguish between not finding a significant nexus on the one hand, and definitively determining that these waters "lack a significant nexus to an (a)(1) through (a)(3) water," on the other.

We agree with Ducks Unlimited that in most cases, not finding a significant nexus now simply means that the science currently available is insufficient to make such a designation. So, as science continues to emerge, areas in which a significant nexus could not now be found might indeed be later found to have a significant nexus based on the new science. For the final rule to be truly science-based, it must allow for this distinct and likely possibility. Clearly, for regulatory purposes, those waters for which a significant nexus could not be demonstrated at this time would need to be treated as being non-jurisdictional unless and until shown otherwise.

I. Retaining the case-specific approach where the science is inconclusive is scientifically sound and helps to accommodate evolving science that could establish significant nexus in the future.

While the currently available science is sufficient to establish significant nexus and jurisdiction by rule for some subcategories of "other waters," we acknowledge that it is not yet sufficient to establish significant nexus and jurisdiction by rule for all such "other waters." The agencies seek comment on how this inconclusiveness of the science relates to the use of case-specific determinations. 79 Fed. Reg. at 22216-17. As noted previously, we agree with the SAB that the current science does *not* support findings that categories of "other waters" as a class lack a significant nexus and are excluded from jurisdiction by rule. We believe the science supports retaining the case-specific approach for those "other waters" that are not specifically found to be jurisdictional by rule. *See Id.* at 22217. As the agencies state, doing so "would retain the ability for a jurisdictional determination consistent with the objective of the CWA to restore and maintain the chemical, physical, and biological integrity of the nation's waters." It would also help to accommodate the emerging science. As science continues to emerge, areas in which a significant nexus could not now be found might indeed be later found to have a significant nexus based on the new science. Once again, it would *not* be appropriate to categorize remaining

"other waters" as not jurisdictional.

J. The final rule should establish a process by which emerging scientific evidence of connectivity can be incorporated into a cumulative body of scientific information and used to inform both case-specific and categorical significant nexus determinations over time.

The preamble also requests comments "on how to best accommodate evolving science in the future that could indicate a significant nexus for these 'other waters.'" 79 Fed. Reg. at 22217. To be science based and to achieve the goals of the CWA, the final rule must accommodate this evolving science. We strongly recommend that the agencies establish in the final rule or preamble a process by which emerging scientific evidence of connectivity can be incorporated into a cumulative body of scientific information and used to inform both case-specific and categorical significant nexus determinations over time.

This process and the scientific information gathered through it should be science-based, transparent, and accessible to the public. We do not believe a subsequent (and repeated) rulemaking process is appropriate for accommodating the evolving science. We join Ducks Unlimited in recommending a nationally standardized and consistently applied geographic database (with accompanying mapping features) developed and maintained to facilitate the objectives of clarity, certainty, predictability, and administrative efficiency that could include data layers related to the findings of significant nexus analyses of "other waters" that would clearly depict:

- ecoregions and/or watersheds for which significant nexus analyses were conducted, and those for which an analysis has not yet been conducted;

- areas within which "other waters" in the aggregate were found to have a significant nexus and would therefore be jurisdictional;

- areas whose "other waters" in the aggregate that could not at this time be demonstrated to have a significant nexus, and would therefore be non-jurisdictional; these areas could be subject to re-assessment as new science emerges;

- if applicable, areas in which it was determined that the "other waters" do not and could not possibly be shown to ever have a significant nexus, and therefore would be non-jurisdictional, or perhaps even excluded if the determination could be made with sufficient scientific finality; and, other relevant information.

K. Summary of Science-based Comments Supporting Findings of Significant Nexus and Jurisdiction by Rule for Other Water Subcategories in Specific Regions

We summarize in this section, and incorporate by reference, several reports detailing peer-reviewed scientific literature and conclusions that support finding certain subcategories of non-adjacent waters jurisdictional by rule. These reports have been submitted to the record during the

comment period at Docket ID No. EPA-OW-2001-0880, and are submitted again with our comments:

- The 2014 Ducks Unlimited Comments on the Proposed Rule, Sections III and IV (November 5, 2014
- *Physical, Chemical, and Biological Impacts of Geographically Isolated Wetlands on Waters of the United States*, Woolford, Bonney, Pringle, River Basin Center, University of Georgia (October 2014)
- *Evidence of Significant Impacts of Coastal Plain Depressional Wetlands on Navigable Waters*, Woolford and Carroll, River Basin Center, University of Georgia (July 2014)

EPA's Connectivity Report and the SAB's Connectivity Peer Review Report also provide substantial support in the administrative record for such categorical jurisdictional determinations. We highlight the wetland types and regions outlined below because, among other reasons: 1) wetland loss has been significant in these regions and the remaining wetlands are highly threatened in the absence of CWA protections; (2) there is literature that clearly demonstrates the abundance and strength of the significant nexuses that exist among these waters and with downstream navigable waters; (3) these wetland types largely fall into the "other waters" category; and, (4) despite individual wetlands often being situated not in proximity to (a)(1) through (a)(3) waters, there is a compelling scientific basis for the vast majority of these waters to be considered jurisdictional on the basis of a comprehensive, science-based significant nexus evaluation.

In issuing the final rule, we urge the agencies to review the reports attached to these comments. It is our position that when this research is combined with the Final Connectivity Report and the many peer-reviewed scientific papers cited therein, the agencies will have the scientific foundation necessary to establish that prairie pothole wetlands, coastal depressional wetlands (such as Carolina and Delmarva Bays), vernal pools, pocosins, and other subcategories of "other waters" should be defined as waters of the United States by rule. This, of course, would obviate the need to perform case-by-case analyses of these waters.

As the agencies conduct these evaluations, they should keep in mind the overall context within which important decisions about significant nexus and jurisdiction will be made. Approximately 53% of the estimated 221 million acres of wetlands originally present in the United States have been lost (Dahl 2000). The CWA undoubtedly contributed to the decrease in the rate of wetland loss since 1972, when the act was passed, through 2004 (Dahl 2006). However, not counting the additions of ponds that have little wildlife value (e.g., farm ponds, golf course ponds, storm water retention lagoons, etc.), the Nation has nevertheless experienced a net loss of over 16 million acres of wetlands since the mid-1950s. Since 1986, the Nation has lost over 2 million acres of vegetated wetlands and 1.4 million acres of freshwater marshes that are among the most important wetlands for waterfowl and other wildlife (data from Dahl 2000, 2006, 2011). These kinds and magnitudes of losses have had a cumulative negative impact not only on critical waterfowl habitats, but also on the Nation's water quality and other federal interests.

Unfortunately, the most recent national wetlands status and trends report (Dahl 2011) reported that since 2004 the rate of wetland loss had increased by 140% over the previous report period.

This is the first acceleration of wetland loss over a 50-year period, and given that this is the first survey period occurring entirely post-*SWANCC*, the acceleration of wetland loss is likely at least partially attributable to the jurisdictional confusion and withdrawal of CWA protections by the agencies in the wake of the *SWANCC* and *Rapanos* cases.

Therefore, the trajectory of the future status and trends of the Nation's wetlands -- and therefore of the future direction of the condition of the Nation's waters -- will be significantly influenced by the content of the final rule on the "definition of the 'waters of the U.S.'"

1. ***Prairie Pothole Region Wetlands***[204]

Prairie pothole wetlands are stereotypical examples of wetlands that would generally be characterized as being "geographically isolated" and classed as "other waters" in the proposed rule. The region is characterized by high wetland densities, and typically contains between 15 and up to 150 wetlands per square mile (National Wetlands Working Group 1988; Baldasarre and Bolen 2006). Thus, prairie pothole wetlands provide one of the best opportunities to show that a large subcategory of wetlands falling primarily within the "other waters" category do indeed have a demonstrable significant nexus with downstream navigable waters. The Prairie Pothole Region (PPR) of the northern Great Plains encompasses over 300,000 square miles, and is encompassed within four Level III ecoregions (#42, 46, 47, and 48). Despite considerable federal investments in wetland conservation, there continues to be a net loss of wetlands in this important region (Dahl 2006).

As documented most recently by Dahl (2014), wetlands in the PPR tend to be remarkably similar in general structure and function. Of the total 6.4 million acres of wetlands, 88% are emergent wetlands (i.e., marshes), making up 93% of all wetland basins in the region (Dahl 2014). Dahl (2014) documented that in 2009 almost 50% of the emergent wetland basins were temporarily flooded (temporary ponds, low prairie wetland), about 42% were seasonally flooded (seasonal ponds, shallow marsh), 6% were semi-permanently (semi-permanent ponds, dugouts, deep marsh), and about 2% were farmed wetlands. In large part, the marked similarity among prairie potholes is due to the fact that they were generally formed when large chunks of ice were dropped by the receding glaciers along with other materials that had carried southward by the glaciers.

<u>Prairie Potholes: Surface Water Storage and Flood Attenuation</u>

The abundance and density of potholes on the PPR landscape in conjunction with their general lack of direct surface water connection to streams and rivers is most important in creating the basis for an especially significant nexus between these wetlands and large navigable waters like the Red, Missouri, and Mississippi rivers.

Just as water during storm events moves through the multitude of small tributaries and eventually affects the integrity of downstream "waters of the U.S.," the same thing occurs with prairie potholes although in the case of the potholes, it is more common for them to serve the function of storing water that would otherwise flow to downstream waters, thereby affect the downstream

[204] This section is excerpted from Ducks Unlimited 2014 Rule Comments, Section III.

navigable waters by decreasing flood flow. However, in many cases, a "fill and spill" type of connectivity is exhibited when the wetland fills to capacity and then spills over into other wetlands and/or to downstream waters (Kahara et al 2009; Shaw et al 2012; Shaw et al 2013; Winter and LaBaugh 2003). During wet periods, there might actually be a smaller number of wetlands on the landscape as a result of nearby wetlands becoming "aggregated" (Kahara et al 2009), as a result of the magnitude of stored water in areas of high pothole density.

Their nature and position on the landscape is the primary reason that potholes serve so well the function of capturing runoff and storing it in intact "non-contributing" basins, i.e., wetlands and lakes (Winter et al. 1984). In general, the presence of many isolated wetlands decreases runoff velocity and volume by capturing high magnitude short duration flows, e.g., runoff of spring thaws, and releasing water (such as through groundwater and evaporation) over an extended period (Carter 1996; Carroll et al 2005). The net effect of this important wetland function is to abate flooding by lowering and moderating the peaks of flood stages, thereby reducing flood damages (Mitsch and Gosselink 1986). *See also* Hubbard and Linder 1986; Gleason and Tangen 2008; Minke et al. 2009; Ripley 1990;Winter 1989. Other work (Hayashi et al 2003; Huang et al 2011; Kantrud et al 1989) concluded that small pothole wetlands retained most of the runoff from spring snow melt within their respective watersheds, thereby moderating snow melt input to regional drainage systems. Miller and Nudds (1996) compared U.S. and Canadian rivers and landscape changes on each side of the international border to provide further evidence that wetland drainage in the upper reaches of the Mississippi River watershed has increased flooding in the Cannonball and Sheyenne rivers in North Dakota, and the Moreau and Big Sioux rivers in South Dakota.

Vining (2002) used a modeling study to demonstrate the importance of storage by wetlands and impacts on stream flow of Starkweather Coulee in North Dakota, stating that his findings were likely similar to the situation found in other drainage basins. *See also* Vining 2004; Pomeroy et al (2014). For a Minnesota watershed, Wang et al (2010) estimated that the loss of the first 10-20% of its wetlands resulted in up to a 40% increase in the peak discharge to downstream waters. Canadian studies are directly relevant to significant nexus evaluation on the U.S. side of the border. Hayashi et al (1998) found that approximately 30-60% of the water in the potholes studied entered them as runoff from spring snowmelt. Thus, when considered in the context of wetland densities and the total storage capacity of the wetlands in the region, this represents a huge volume of water that would otherwise move through artificial ditches until ultimately reaching a navigable waterway and increasing flood flows in the river. *See also* Fang et al (2014) and Pomeroy et al (2014).

In the Red River basin which delivers the majority of the nutrients to Lake Winnipeg, over 50% of the wetlands have been eliminated in the U.S. portion of the watershed (Schindler et al. 2012), with as much as 90% loss or more in portion of the Red River watershed in Canada (Hanuta 2001). Increases in flooding and water yield have been directly linked to increased phosphorus export in the Lake Winnipeg watershed (Environment Canada and Manitoba Water Stewardship, State of the Lake Report 2011) and demonstrate the ability for isolated wetlands, in the aggregate and at the level of the watershed, to affect the integrity of one of the world's largest lakes.
Wetland drainage has significantly decreased the cumulative storage capacity of wetlands (Dahl 1990; Dahl and Johnson 1991), and this decrease has been linked to increases in the frequency of

flooding in and around the PPR (Miller and Frink 1984; Miller and Nudds 1996; Manale 2000). *See also* Yang et al. 2008, 2010.

Similarly, Johnson et al. (1997) reported that about 33% of the drained wetlands in the flood-prone Vermillion River watershed (southeast South Dakota) flowed into artificial drainage ditches, and that a quantity of water equivalent to about half of the river's annual flow could be stored by restoring those wetlands. Pomeroy et al (2014) pointed out that artificial drainage of prairie potholes has the effect of adding permanent surface connections and thereby reduces the ability of the watershed to store water, even under wet conditions, with the consequences being increased stream flood frequencies and magnitudes (Gleason et al 2007; Yang et al 2010). Jahn (1981), also in the context of the Red River system, stated that wetlands there significantly reduced flood levels in major metropolitan areas downstream.

Hey (1992) estimated that as a result of approximately two-thirds of the original potholes having been lost through drainage, the region has lost 20-30 million acre-feet (0.87 – 2.2 trillion cubic feet) of water storage capacity. A number of studies have concluded that loss of pothole wetlands has contributed significantly to flooding and increases in associated damages along the Red River of North Dakota and in portions of Minnesota and Iowa (e.g., Campbell and Johnson 1975; Moore and Larson 1979; Brun et al. 1981). Ludden et al. (1983) found that small basins in the Devil's Lake watershed in North Dakota could store 72% of the total runoff from a 2-year frequency flood and approximately 41% of the total runoff from a 100-year frequency flood, with Malcolm (1979) and Gleason et al. (2007) and others reporting impacts of similar magnitude for north central North Dakota and western Minnesota, respectively. Hann and Johnson (1968) found that depressional areas in north central Iowa had the ability to store more than one-half inch of precipitation runoff within their individual watersheds.

Gleason et al. (2008), based on a study covering almost 500 wetlands across Iowa, North Dakota, South Dakota, Minnesota, and Montana, conservatively estimated that wetland catchments covering ~1.1 million acres on USDA Conservation Reserve Program and Wetland Reserve Program lands can capture and store an average of 1.1 acre-feet of water per acre of wetland (a total of more than 1.2 million acre-feet [52.2 billion cubic feet] of water). The clear inference that can be drawn is that if this quantity of natural wetlands were lost because of a lack of CWA protection, there would be significant impacts from the more than 1.2 million acre-feet of water that would otherwise be flowing more directly and quickly to the downslope navigable waters. *See also* Gleason et al. 2007; Kurz et al. 2007 (modeled peak flow reductions associated with artificial storage of precipitation on flooded agricultural lands in the Red River valley of the north central PPR, and estimated that with both conservative (259,000 acre-feet) and moderate (2,188,400 acre-feet) storage volumes placed on the landscape, flood stages like those of the flood of 1997 on the Red River could have been reduced by 2-5 feet at Grand Forks). Thus, it is reasonable to predict that similar impacts of flood attenuation would be associated with similar storage volumes in natural wetlands, again demonstrating the significant nexus that exists between the aggregate of the pothole wetlands with navigable waters.

Although potholes typically are not directly hydrologically connected to other waters via surface connections, during wet periods water tables rise and surface water levels reach outlet elevations of most potholes (Sloan 1972; LaBaugh et al. 1998; Winter et al. 1998; USGS 1999). This "fill

and spill" phenomenon results in temporary but direct hydrologic connections among and between potholes, and between complexes of potholes and the streams and rivers in the region, with associated impacts on regional water regimes in navigable waters and their tributaries (Stichling and Blackwell 1957; Sloan 1972; Leitch 1981; Winter 1989; USGS 1999; Leibowitz and Vining 2003).

Lenhart et al (2011) noted that over the last 30 years stream flows at less than bank full elevation had increased, and that while large floods had not significantly increased, the larger, longer duration flow volumes had a significant impact on the movement of sediment and nutrients, with obvious implications for total daily maximum loads and nutrient management issues. Odgaard (1987) found that average daily flows only one-third bank full were associated with increased bank erosion, streambank collapse and downstream sedimentation. Looking broadly at agricultural watersheds in two time periods (1940-70 versus 1980-2009), Lenhart et al (2011) found that streamflow had increased in the agricultural landscapes due to increased stormwater runoff and base flows, both of which are associated with wetland drainage. They stated that mean annual flows had increased in most of the Minnesota River basin and Red River basin, as well as in the Des Moines, Sugar and Root Rivers.

In an important recent study of 21 southern Minnesota watersheds, all contributing flow via tributaries to the Mississippi River, Schottler et al (2013) showed that surface drainage of wetlands was a significantly greater driver of increased downstream river flow and the consequences of the increased flows extended to increased erosion and widening of stream channels which in turn causes increased turbidity and sediment loading and transport (Doyle et al 2005; Simon and Rinaldi 2006; Wolman and Miller 1960).

Prairie Potholes: Surface-Groundwater Interrelationships

Prairie potholes, as well as other types of "other waters," can, and very often do, contribute to groundwater recharge, and this groundwater often continues to move downslope toward intermittent or flowing streams ultimately discharging into navigable waters or their tributaries (Winter et al. 1998). For prairie potholes, where the water table tends to be a subdued image of the topography and is generally very near the land surface (Sloan 1972), pothole wetlands can serve as groundwater recharge sites (Euliss et al. 1999). Winter and LaBaugh (2003) stated that prairie potholes are commonly connected via groundwater flow systems, and that water that seeps from the wetland into shallow gravel aquifers can annually travel many kilometers, while movement through clay or silt layers can be much slower. Van der Kamp and Hayashi (1998) stated that there is little groundwater recharge from dry uplands outside depressions, and that groundwater recharge from small depressions constitutes a large proportion of the total recharge in many areas.

Winter and Rosenberry (1998) stated that some water seeping from potholes into groundwater passes beneath local flow systems and discharges to wetlands at lower elevations, commenting on the complexity of the connections between potholes and groundwater while recognizing that the fundamental connections are common. Short-term, scientifically verified determinations are not only costly and largely impractical to apply, they can also lead to conclusions that are incorrect in the long-term due to their short-term nature and inability to account for variation

over time.

Because seepage contributions to groundwater are greatest where wetland shoreline is largest relative to the water volume (Millar 1971), the smallest pothole wetlands are proportionately more important to groundwater connectivity. Sloan (1972) stated that surface water seepage to groundwater was greater for ephemeral and temporary wetlands than for other wetland types. And, these are the very types of wetlands that are being drained at the greatest rates (Dahl 2014), and are most at risk of degradation or loss in the absence of CWA jurisdiction.

Some potholes have a net seepage outflow (groundwater recharge basins), others have a net seepage inflow (groundwater discharge basins), and many basins function alternately - at times having a net outflow into the groundwater and at other times having a net inflow (Sloan 1972; LaBaugh et al. 1998; Johnson et al 2004; Swanson et al 1988). Hubbard and Linder (1986) concluded that approximately 12% of the total storage capacity of wetlands in an area in northeast South Dakota infiltrated to groundwater as recharge, and that drainage of potholes therefore significantly reduces ground water recharge rates. Net seepage outflow into the groundwater can more typically amount to 20-30 percent of the total water loss for prairie wetlands (Eisenlohr and Sloan 1968; Shjeflo 1968; Eisenlohr and Sloan 1972; Winter and Rosenberry 1995).

Pothole wetlands are generally connected to and continuous with the groundwater in the surrounding area in relatively local groundwater flows (van der Kamp and Hayashi 2008), but these surficial aquifers can extend up to several miles. Regional aquifers are located deeper than the surface aquifers, and water flow into and through these deeper aquifers can be significant in locations in which they underlay an extensive area, and often flow to distant discharge areas (van der Kamp and Hayashi 2008). While a relatively small portion of recharge water flows to these deeper, geographically more expansive regional aquifers, this portion of the groundwater recharge from wetlands is important for sustaining groundwater resources (van der Kamp and Hayashi 2008).

To support CWA jurisdiction, it is important to note that the groundwater to which the pothole wetlands are linked subsequently provides input to lower-lying wetlands and stream valleys (van der Kamp and Hayashi 1998). Numerical simulation of regional groundwater flow systems in Stutsman and Kidder counties, North Dakota, portrayed lateral movement of groundwater flow over 16 miles to discharge into Pipestem Creek, a prominent stream in the region (Winter and Carr 1980). In another area of the PPR in northwest Minnesota, Cowdery et al. (2008) demonstrated that horizontal hydraulic conductivity in shallow aquifers was high and that these aquifers can extend tens of miles in the region and interact with deep aquifers in some areas. Surface aquifers were recharged in significant part from surface waters, particularly from at-risk seasonal and ephemeral wetlands. Notably, discharge areas for the water from these shallow aquifers included surface waters, as well as withdrawal from wells. In fact, 17-41% of the water from the surface aquifers was discharged to surface waters that left the study area, and groundwater discharge comprised 30-71% of all surface drainage flow, helping to maintain base flow. Van Voast and Novitzki (1968) concluded that groundwater and surface water interconnections (including flowing waters) were typical in the Yellow Medicine River watershed in the PPR region of southwest Minnesota.

Prairie Potholes: Water Quality Relationships

Potholes act as a sink for nutrients and other chemicals, including those widely used for agricultural purposes, and thereby affect and improve the quality of runoff water (Davis et al. 1981; Crumpton and Goldsborough 1998; van der Valk 1989; Whigham and Jordan 2003). Ditches draining potholes create new surface connections between previously geographically isolated wetlands and tributaries and rivers (Brunet and Westbrook 2011). With pothole wetlands being the landscape's primary storage area for nutrients and salts, these solutes (along with increased sediment loads) are carried downstream when the pothole is drained (Brunet and Westbrook 2011; Lenhart et al 2011). *See also* Yang et al. 2008, 2010. When as a result of the ditching or filling of wetlands the retention time is shortened or eliminated and the associated biochemical processes are thereby altered, the cleansing or filtration function of the former wetland is lost or degraded, with direct negative impacts on the quality of the downstream navigable waters. Similarly, water retained in a pothole is cleansed of much of its load of pollutants via biochemical processes before it enters groundwater and flows laterally to other areas and other waters, or downward into deeper aquifers, as described earlier.

Ginting et al (2000), working in the Minnesota River watershed, also showed that draining wetlands there led to increased runoff, thereby carrying elevated levels of solids and nutrients into downstream waterways. The findings of Lenhart et al (2011) and Odgaard (1987) described earlier clearly demonstrated that the physical impacts of increased downstream flows resulting from drainage of potholes were also accompanied by degradation of the chemical integrity (increased sediment movement and nutrient transport and concentration) of downstream waters in the PPR. The increased stream flows that result from draining potholes and reducing the retention time of water on the landscape causes increased stream flow which in turn increases river erosion, bank sloughing and widening, and reduces water quality by increasing turbidity and sediment loads (Schottler et al 2013). All of these significant impacts to the integrity of downstream waters are the direct consequence of the drainage or filling of pothole wetlands across broad landscapes.

Water captured and retained within pothole wetlands has been shown to have elevated levels of pesticides. In a portion of the Canadian PPR containing almost 1.8 million potholes, up to 60% of the wetlands examined exceeded Canadian guidelines for the protection of aquatic life for at least one pesticide (Donald et al 1999). Squillace et al (1996) found that in the Cedar River basin of Iowa a number of agricultural chemicals moved from surface water bodies into the groundwater, and that subsequent movement and discharge of that groundwater served as the primary source of these chemicals entering the Cedar River and thereby impacting its chemical integrity.

Prairie Potholes: Biological Nexus

Lannoo (1996) demonstrated that where PPR wetlands have been connected to navigable waters (e.g., in the Iowa Great Plains region), amphibian populations in the formerly isolated wetlands have decreased significantly. Thus, in an instance such as this, the creation (by draining and ditching) of a surface hydrological nexus where none previously existed between the wetland

and navigable water had a significant negative effect on the biological integrity of the waters involved. In addition, several waterfowl species require or use both saline lakes and freshwater wetlands and rivers in North Dakota (Windingstad et al. 1987; Swanson et al. 1984), with the freshwater wetlands being necessary for purposes of osmoregulation.

In addition, the cumulative impacts of pothole drainage to downstream waters, including increased pesticide levels (Donald et al 1999) and increased turbidity and sedimentation (Gleason et al 2003; Schottler et al 2013), would clearly impact the biological integrity of downstream waters. Gleason et al (2003) found that sediment deposition of only 0.5 cm resulted in a 99.7% reduction in total invertebrate emergence and 91.7% reduction in seedling emergence in an experiment conducted in the context of the PPR. The increased flows in downstream waters resulting from drainage or filling of potholes (see previous section and citations) would also affect the capability of those waters to sustain populations of organisms more suited to the lower flows, decreased concentrations of nutrients and other solutes, and lower sedimentation rates of waters less impacted by drainage. Thus, the biological impacts to aquatic life in navigable waters that result from the increased hydrological connectivity and corresponding increases in stream flow and erosiveness, sediment loads, and nutrient and pesticide concentrations, cannot be ignored as an important component of the significant nexus evaluation for the ecoregion.

Prairie Potholes: Economics

Some of the greatest economic impacts associated with the alteration of the significant nexus between pothole wetlands and navigable waters in the PPR are those associated with increased flood damages resulting from lost flood attenuation functions. For example, the estimated net benefit of artificially storing water in the Red River valley as described by Kurz et al. (2007) exceeded $800 million over 50 years in some scenarios as a result of reduced flood stages in the Red River and avoided damages and other benefits. Hey and Phillipi (1995) documented that mean annual flood damage in the Upper Mississippi River basin had increased 140% over the previous 90 years (in adjusted dollars). Given the extent of increasingly frequent damaging floods along rivers in and flowing out of the Prairie Pothole region (as well as in other areas around the country), the economics associated with avoided damages through wetland protection and maintenance of flood water storage functions should also be an important component of significant nexus analyses.

One recent study (Yang et al. 2008) also estimated the value of the nutrient removal and carbon sequestration services lost due to draining or altering potholes in the Broughton Creek watershed since 1968 to be $430 million.

In summary, we believe that the weight of the existing scientific evidence clearly demonstrates that when prairie potholes are drained or filled such that they can no longer fulfill functions such as water storage and water quality maintenance, the physical, chemical and biological integrity of the receiving downstream navigable waters is negatively affected. The significant nexus they have as a result of "geographic isolation" is fundamentally altered when the basins are filled or drained via ditches and more directly linked to the downstream waters. The extent to which navigable waters are impaired depends

upon the scale of the altered inputs, thereby reinforcing the appropriateness and importance of using an appropriate watershed scale, or groupings of watersheds, to assess aggregate impacts.

2. *Texas and Southwest Louisiana Coastal Prairie Wetlands*[205]

The inland, freshwater wetlands of the coastal prairies of Texas and southwest Louisiana are contained within Level III ecoregion number 34, "Western Gulf Coastal Plain." The region is a mosaic of low relief mounds, flats, and depressional wetlands (Moulton and Jacob 2000). This ecoregion provides another good example of a situation in which it would make no sense to do significant nexus analyses for each single point of entry watershed. They are by-and-large aligned along the Gulf coast, and are all very similar in their fundamental hydrogeomorphic and ecologic characteristics, strongly reinforcing the case for ecoregional analyses.

The wetlands across the region can be locally diverse, but their basic hydrology typically ranges from temporarily flooded to only rarely exposed, much like the prairie potholes. And, they typically occur in relatively high densities. Studying only a relatively small but typical portion of the ecoregion in a 200 mi^2 area near Galveston Bay, researchers counted over 10,000 non-riverine palustrine wetlands, with the median size being only 0.37 ha, and 72% being less than 1 ha (Enwright et al 2011). In the aggregate, the wetland basins and their catchments represented over 40% of the study area (Enwright et al 2011). Like prairie potholes, most are geographically isolated, and are being lost relatively rapidly. In Harris County and the Houston area, 13% were drained or filled over a recent 10-year period (Jacob and Lopez 2005). This is a region and category of wetlands which the SAB Rule Letter to the EPA identifies as being similarly situated "other waters" that in the aggregate have a significant nexus that affects the integrity of downstream navigable waters, and therefore should be considered jurisdictional waters of the United States.

<u>Gulf Coastal Prairie Wetlands: Hydrologic and Chemical Connectivity</u>

In south Texas near Galveston Bay, coastal prairie wetlands are a prominent and important component of the landscape. Two recent studies (Forbes et al. 2010; Wilcox et al. 2011) showed that in the case of these coastal depressional wetlands that have been considered "geographically isolated wetlands," intermittent surface water connections with the surrounding coastal jurisdictional waterways involved 17-18% of the precipitation falling on the watershed during the study period. Wilcox et al (2011) demonstrated that the complexes of the wetlands that they studied here in fact exhibited a strong surface water connection with the waterways in the region, serving in effect as headwaters with intermittent but regular discharges to flowing waters and estuaries in the region. Both studies concluded that much of the surface runoff entering the navigable Galveston Bay and other nearby waters likely passes through coastal prairie wetlands, and support the contention that their results can be generalized across the Texas Gulf Coastal Plain.

Forbes et al. (2012) also found that these wetlands significantly affect the water quality of navigable waters by reducing incoming inorganic nitrogen by approximately 98%, and inorganic phosphorus by 92%. Thus, these wetlands are positioned within the hydrologic flow paths to

[205] This section is excerpted from Ducks Unlimited 2014 Rule Comments, Section III.

serve as strong sinks for nitrogen and phosphorus and thereby provide substantial reduction of the pollution of runoff waters that ultimately enter the Galveston Bay estuary. The fixed carbon and nitrogen then exported from these wetlands to the navigable waters provides valuable food web support, thereby creating a biological nexus, as well.

In the case of these Gulf coastal prairie wetlands, we have a relatively few focused studies that have provided strong evidence of connectivity bearing upon their potential designation as "waters of the U.S." by rule. Based on the recent increased rate of research related to connectivity of the type necessary for evaluation of "significant nexus" determinations in the aggregate, we would anticipate a continued and important need to have a process through which new science will be able to be continually incorporated into the decision making process for what are now being called "other waters."

Gulf Coastal Prairie Wetlands: Biological Connectivity

With the distinction between migrating and migratory birds in mind, we understand that, for example, the fact that a redhead duck migrating from its breeding habitat in North Dakota stops for a short time at a wetland in central Iowa on its way to its wintering ground on the Texas Gulf coast, cannot in and of itself be used to assert CWA jurisdiction over the Iowa wetland. However, when a migratory bird (a legal designation of a large category or birds, as opposed to resident or non-migratory species) like the redhead can be shown to be dependent upon *both* navigable waters and "other waters" *within* a season and within a relatively local or regional context, then the migratory birds should indeed contribute to the establishment of a significant biological nexus between the "other waters" and the navigable water.

Redheads and lesser scaup during their wintering period provide excellent examples. Approximately 80% of the entire North American population of redheads winters in estuaries of the Gulf of Mexico, mostly in the Laguna Madre of Texas and Tamaulipas, Mexico (Adair et al. 1996; Ballard et al. 2010). They forage almost exclusively on shoalgrass (*Halodule wrightii*) in the hypersaline lagoon, which is a traditionally navigable waterway (Ballard et al. 2010). Large numbers of lesser scaup also winter in the Gulf Coast region, and generally forage on invertebrates in the saline and brackish marshes and offshore habitats of Texas and Louisiana (McMahan 1970). Large concentrations of diving ducks in the region, including these two species, must also make daily use of inland, coastal freshwater ponds in order to dilute and excrete the salt loads that are ingested while feeding in the saline habitats (Adair et al. 1996; Ballard et al. 2010; Mitchell et al 1992). Activity budgets documented that redheads and scaup spent approximately 37% and 25% of their time, respectively, on the freshwater wetlands actively drinking (Adair et al. 1996). While both studies found that redheads and scaup tended to make greater use of wetlands that were in closer proximity to the coast when they were available, they flew farther inland when necessary during dry conditions to acquire freshwater because they require the freshwater to survive. Adair et al. (1996) found that redheads used wetlands up to 13 miles inland, and scaup used wetlands up to 33 miles from the coastal navigable waters. Thus, these researchers and others (e.g., Woodin 1994) concluded that these migratory bird species are dependent upon *both* the navigable saline waters of the Laguna Madre and Gulf of Mexico, *and* the inland, physically non-proximate freshwater wetlands, throughout the approximately 5-month wintering period. **Therefore, if the inland freshwater wetland habitats, i.e., the "other**

waters," are adversely impacted because of a lack of CWA jurisdiction, the region's ability to support redhead, scaup and other diving duck populations is degraded, and the biological integrity of the traditionally navigable water of the Gulf of Mexico's Laguna Madre is therefore impacted. The dependency upon both the "other waters" and the navigable waters involved here therefore clearly constitutes a significant nexus that is fully consistent with the legal framework laid out by Justice Kennedy.

Gulf Coastal Prairie Wetlands: Economic Consequences Related to Hydrologic Connectivity

A series of studies around the Gulf Coast documented the direct, significant impacts of wetland drainage on real flood damages based on actual insurance costs. This is particularly relevant to examine here because the state of Texas consistently has more flood damage than any other state. Brody et al (2014) looked at an individual watershed in this ecoregion near Houston, and found that the presence of wetlands was the second-most important land-use-land-cover factor related to flood damages totaling $356 million over 11 years. Of all variables, being surrounded by wetlands had the strongest influence on reducing flood damages. Looking more broadly at a 37-county area along the entire Gulf coast of Texas between 1997 and 2001, Brody et al (2008) found that alteration of wetlands was strongly correlated with flood damages. They noted that in areas with greater degrees of wetland loss, flood damages increased with a given amount of precipitation.

Brody et al (2007a) conducted a similar examination of flood damage and wetland alteration between 1991 and 2002 over an even more expansive area that included all fourth-order HUCs within 100 miles of the coasts of Texas and Florida. Once again, they clearly demonstrated a strong relationship between wetland loss and alteration and increased flood damage. Importantly, they found that the cumulative effects of many small scale impacts to wetlands had a significantly greater effect on the level of flood damages than did larger, individual impacts. Brody et al (2011) looked at more than $13 billion in insured property losses across 144 coastal counties in all five Gulf coast states (plus several counties in extreme southwest Georgia) over the 2001-2005 period. They again found that wetland alteration was a significant factor in explaining flood damages.

Similar studies in Florida (Brody et al 2007b; Highfield and Brody 2006) also demonstrated that flood-caused property damages significantly increased as a consequence of the degree to which naturally occurring wetlands were altered. Thus, this series of powerful studies convincingly demonstrated the direct economic consequences of failure to recognize the connectivity of many "other waters," including geographically isolated wetlands, to downstream waters, and that the cumulative effect of many small, scattered wetland impacts to these wetlands are significant, oftentimes more so than individual larger impacts.

In summary, and in accordance with the conclusion expressed by the SAB in their Rule Letter to the EPA, the available science strongly supports the designation of the "other waters" classed as Gulf coastal prairie wetlands throughout this ecoregion, and in the aggregate, as jurisdictional by rule.

3. *Carolina Bays, Delmarva Bays, Pocosins and Similar Coastal Depressional Wetlands*[206]

Some of the wetlands most in danger of losing protection under the CWA are wetlands found in the southeastern United States like pocosins and Carolina bay wetlands. Pocosins, from the Algonquin word meaning "swamp on a hill," occur in the southeastern Coastal Plain from Virginia to North Florida.[207] Seventy percent of the nation's 3.14 million acres[208] of pocosins are found in North Carolina, where they comprise approximately 50 percent of the state's freshwater wetlands.[209] Broadly defined, pocosins encompass all shrub and forested bogs, Atlantic white cedar stands, and some loblolly pine stands on flooded soils. They are rainfall-driven and are usually not connected by streams to major rivers. However, they are often found adjacent to estuaries and have surface hydraulic connections have been linked to water quality and salinity gradients in these estuaries. Scientists suggest that because of this connection and because pocosins cover vast areas on the coast that "these wetlands are connected to regulated waters of the United States."[210]

Carolina or Delmarva bays are depressional wetlands found throughout the southeastern United States from Delaware to Florida, with most bays located in southeastern North Carolina, South Carolina, and northeastern Georgia. They occur in topographic depressions and are shallow and oval shaped, and their shape allows for surface water accumulation. Water sources may be precipitation, surface water flow, streams, or groundwater, and water may exit bays through evapotranspiration, outlets, or to groundwater recharge.[211] Many bays hold water only during part of the year. These bays are home to a wide variety of plants and wildlife, including frogs, salamanders, turtles, snakes and alligators. Migratory waterfowl and mammals like deer, raccoons, and opossums also use the bays. Salamanders and frogs are prolific in the bays and are dependent on these wetlands for use as breeding sites.[212]

Chemical Connection

From a water quality perspective, so-called isolated wetlands are rarely completely isolated from other wetlands or traditionally navigable waters. Indeed, wetlands biologist Dennis Whigham suggests that "isolation is a term that is not very useful from an ecological perspective."[213] Geographically isolated wetlands are at times connected to other waters by groundwater flows,

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[206] This section is largely excerpted from SELC 2014 Rule Comments.
[207] Richardson, Curtis J. 2003. *Pocosins: Hydrologically Isolated or Integrated Wetlands on the Landscape?* WETLANDS, 23 (3): 563-576.
[208] "Friends of Pocosin Lakes National Wildlife Refuge: A Helping Hand to Wildlife." 4 Apr. 2008. http://www.noolf.com/index.cfm/sid.356/nid.2218/do.s/p.2?action=&PageNum_get=2. Last accessed 12 Jul., 2011.
[209] U.S. Department of the Interior. The Impact of Federal Programs on Wetlands Vol. II. *North Carolina: The Pocosins and Other Freshwater Wetlands.* http://www.doi.gov/oepc/wetlands2/v2ch16.html. Last accessed 12 Jul., 2011.
[210] Richardson, *supra note* 208.
[211] North Carolina Division of Coastal Management. Carolina Bay Wetlands. http://dcm2.enr.state.nc.us/wetlands/Coastal_Explorers/cpfmodule/cpf_mapping1.htm. Last accessed 12 Jul., 2011.
[212] Savannah River Ecology Laboratory, University of Georgia. Carolina Bays Fact Sheet. 2007. http://www.srel.edu/outreach/factsheet/carolinabays.html. Last accessed 12 Jul., 2011.
[213] Whigham, Dennis F., Jordan, Thomas E. 2003. *Isolated Wetlands and Water Quality*. WETLANDS , 23(3): 541-549.

intermittent streams, or overland flows.[214] This connection has been found in bays,[215] pocosins,[216] and limesink wetlands.[217] Because of this hydrological connection, wetlands can have significant effects on the chemical quality of downstream waters. Wetlands can capture and store large amounts of water, acting as sponges. As they absorb flood water, run-off and rain, they filter pesticides, excess nutrients, sediment and other pollutants, protecting the health of downstream tributaries, rivers and wetlands.[218] For example, a 2010 assessment prepared for the U.S. EPA of geographically isolated wetlands in 88 counties of the Carolinas showed that these isolated wetlands stored significant amounts of water and in doing so captured heavy metals, nutrients, and carbon.[219] Accordingly, the loss of geographically isolated wetlands would potentially have negative effects on the quality of downstream waters and the ecological and human communities that rely on them.[220]

Another important example of chemical connectivity between upland wetlands and downstream estuaries and other traditionally navigable waters is the flow of primary production between them.[221] Because of this flow, many species that utilize estuaries benefit from the production of tidal marshes and wetlands even though they never occupy these areas. One study demonstrated that there was rarely a time when the estuarine taxa surveyed did not contain isotopic signatures of all primary producers in the region, including primary producers from distant marshes. The results indicate significant material flow from areas of primary production in marshes to estuarine and open water environments and that wetlands do not function in isolation when supporting estuarine secondary production, but rather are integrated components of larger systems.[222]

Physical Connection

As with chemical connectivity, some wetland biologists regard the term "isolated" to be inappropriate to describe wetlands, because many are hydrologically connected to other wetlands or TNWs through groundwater flows or intermittent overflows.[223] Hydrologic models of Carolina bay wetlands indicate that the bays are a flow-through wetland system, receiving ground water from the adjacent upland, but recharging the groundwater to lower topographic

[214] Whigham, *supra note* 214.
[215] Sun, Ge, et al. 2006. *Modeling the Climatic and Subsurface Stratigraphy Controls on the Hydrology of a Carolina Bay Wetland in South Carolina, USA*. WETLANDS, 26(2): 567-580.
[216] Richardson, *supra note* 208.
[217] Opsahl, Stephen P. 2004. *Organic Carbon Composition and Oxygen Metabolism Across a Gradient of Seasonally Inundated Limesink and Riparian Wetlands in the Southeast Coastal Plain, USA*. BIOGEOCHEMISTRY, 76: 47-68.
[218] Society of Wetland Scientist letter to Donna Downing, U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds on Advance Notice of Proposed Rulemaking EPA Docket # OW-2002-0050; (April 16, 2003) http://www.sws.org/regional/northcentral/documents/swscommentsisolatedwetlands.pdf (Last viewed on June 2011).
[219] Assessing Geographically Isolated Wetlands in North and South Carolina: The Southeast Isolated Wetlands Assessment (SEIWA), Final Report, Prepared for U.S. Environmental Protection Agency ORD NHEERL (Feb. 17, 2010).
[220] Whigham, *supra note* 214.
[221] Weinstein, Michael P., Litvin Steven Y., Guida, Vincent G. 2005. *Considerations of Habitat Linkages, Estuarine Landscapes, and the Tropic Spectrum in Wetland Restoration Design*. Journal of Coastal Research, 40: 51-63.
[222] Weinstein, *supra note* 222.
[223] Tiner, Ralph W. 2003. *Geographically Isolated Wetlands of the United States*. WETLANDS, 23(3): 494- 516.

areas, especially during wet periods in winter months.[224] A later study of a similar area concluded that "the dynamic nature of the hydrology in this Carolina bay clearly indicates it is not an isolated system as previously believed."[225]

Pocosins demonstrate similar physical connections to downstream waters. Pocosins are both important water storage systems and a source of water for the Coastal plains, connecting them to downstream and coastal waters.[226] Because of surface overflow and because pocosins cover vast areas on the coast, wetland biologists consider these wetlands to be connected to regulated waters of the United States.[227] In fact, a survey of U.S. Army Corps of Engineers personnel in North Carolina indicates that most pocosins are considered hydrologically connected to regional waters because they are the primary source of surface water flow on landscapes where they dominate.[228] In accordance with this understanding of physical connectivity, wetlands scientists urge the entire hydrologic system needs to be considered in establishing a definition of hydrologic isolation.[229]

Biological Connection

Geographically isolated wetlands, including pocosins and Carolina bays, are biologically diverse ecosystems. The loss of such wetland habitats could have a serious impact on the survival of the species that depend on them. By protecting these wetlands, the Clean Water Act provided one of the few federal safeguards for the protection of these biodiversity resources. Out of the total of 274 at-risk plant and animal species supported by geographically isolated wetlands, 35 percent of species are not known to be supported by any other type of habitat.[230] Additionally, 86 plant and animal species listed as "threatened," "endangered," or "candidate" under the Endangered Species Act are found in geographically isolated wetland habitats.[231]

Numerous species are dependent on geographically isolated wetlands in the southeast. Importantly, because all of these species travel between wetlands, they serve to link wetlands to one another and to other waters. The following are examples of studies that document the presence and movements of species of ducks, frogs, turtles, salamanders, fish, newts, and snakes in southeastern wetlands.

- Wood ducks living in the riverine wetlands of the Tennessee-Tombigbee Rivers and Waterway in Alabama and at Noxubee National Wildlife Refuge (NNWR) in Mississippi

[224] Sun, *supra note* 215.
[225] Pyzoha, Jennifer E., et al. 2008. *A Conceptual Hydrologic Model for a Forested Carolina Bay Depressional Wetland on the Coastal Plain of South Carolina*. USA HYDROL. PROCESS, (22) 2689.
[226] Richardson, *supra note* 208.
[227] *Id*.
[228] *Id*..
[229] Winter, Thomas, LaBaugh, James W. 2003. *Hydrologic Considerations in Defining Isolated Wetlands*. WETLANDS, 23(3): 532-540.
[230] Comer, P., K. Goodin, A. Tomaino, G. Hammerson, G. Kittel, S. Menard, C. Nordman, M. Pyne, M. Reid, L. Sneddon, and K. Snow. 2005. *Biodiversity Values of Geographically Isolated Wetlands in the United States.* Nature Serve, Arlington, VA. http://www.natureserve.org/library/isolated_wetlands_05/isolated_wetlands.pdf (Last viewed June 2011).
[231] *Id.*

traveled to geographically isolated wetlands from these TNWs to geographically isolated scrub-shrub wetlands to breed.[232]

- Green treefrogs, which typically occur in permanent lakes, ponds, swamps and occasionally temporary ponds, were shown to interbreed with barking frogs, which dwell entirely in geographically isolated wetlands. Their hybrids will return to these geographically isolated wetlands to breed.[233]

- The semi-aquatic Eastern Mud Turtle is a bottom-dweller of shallow, slow-moving water bodies and geographically isolated wetlands, but during the late summer and fall, individuals leave their aquatic habitat for extended periods to overwinter on land. Movement between aquatic water bodies is common.[234]

- Chicken turtles, which are found primarily in shallow and seasonally fluctuating wetlands in the southeastern United States but are rare in permanent wetlands, have been documented to move distances of several hundred meters between geographically isolated wetlands.[235]

- Sirens and Amphiumas (salamanders) in the Savannah River Site in South Carolina colonize geographically isolated wetlands through temporary aquatic connections to other bodies of water.[236]

- Fish found in geographically isolated Carolina bay wetlands in the Savannah River Site confirm surface water connections between the wetlands and the Savannah River during times of wetland overflow flooding.[237]

- Red-spotted newts in a series of mountain ponds in the Shenandoah Mountains of Virginia were documented to migrate "en masse" every August and September, moving to and from ponds to breed.[238]

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[232] Davis, Brian, Cox, Robert R.Jr., Kaminski, Richard M, Leopold, Bruce D. 2007. *Survival of Wood Duck Ducklings and Broods in Mississippi and Alabam*a. JOURNAL OF WILDLIFE MANAGEMENT, 71(2): 507-517.
[233] Gunzburger, Margaret S. 2005. *Differential Predation on Tadpoles Influences the Potential Effects of Hybridization between Hyla cinerea and Hyla gratiosa*. JOURNAL OF HERPETOLOGY, 39(4): 682-87.
[234] Harden, Leigh Anne, Price, Steven J., Dorcas, Michael E. 2009. *Terrestrial Activity and Habitat Selection of Eastern Mud Turtles (Kinosternon subrubrum) in a Fragmented Landscape: Implications for Habitat Management of Golf Courses and Other Suburban Environments.* COPEIA, (1) 78-84.
[235] Buhlmann, Kurt A., Congdon, Justin D., Gibbons, J. Whitfield, Greene, Judith L. 2009. *Ecology of Chicken Turtles (Deirochelys Reticularia) in a Seasonal Wetland Ecosystem: Exploiting Resource and Refuge Environments*. Herpetologica, 65(1): 39-53.
[236] Snodgrass, Joel W, Ackerman, Jerry W., Bryan Jr., A. Lawrence, Burger, Joanna.1999. *Influence of Hydroperiod, Isolation, and Heterospecifics on the Distribution of Aquatic Salamanders (Siren and Amphiuma) among Depression Wetlands.* COPEIA, (1): 107-113.
[237] Snodgrass, Joel W., et al. 1996. *Factors Affecting the Occurrence and Structure of Fish Assemblages in Isolated Wetlands of the Upper Coastal Plain, U.S.A.*. CAN. J. FISH. AQUATIC. SCIENCE, 53(2): 443-454.
[238] Gill, Douglas E. 1978. *The Metapopulation Ecology of the Red-spotted Newt, Notophtalmus viridescens (Rafinesque).* ECOLOGICAL MONOGRAPHS, 48(2): 145-166.

- Several species of aquatic and semi-aquatic worm snakes, found primarily in geographically isolated wetlands formed metapopulations in the Lower Atlantic Coastal Plain of South Carolina during periods of inundation when wetland boundaries expanded and the wetland system became more interconnected.[239]

- Alligators in southern Georgia were shown to form a functional connectivity among the seasonal wetland, terrestrial, and creek–river systems, and that this connectivity is a consequence of the ontogenetic niche shift in habitat use and results in significant movement of energy and biomass. As alligators progress from juvenile life stages to adulthood, they shift from using wetland habitat to using riverine habitat. Females also return to wetlands to breed.[240]

Decreasing the amount of geographically isolated wetlands has been shown to reduce the population of species in larger wetlands.[241] This phenomenon has been documented extensively in populations of pond-breeding amphibians like newts.[242] The loss or alteration of any wetland, large or small, reduces the total number of sites at which pond-breeding individuals can reproduce and successfully recruit juveniles into the breeding population.[243] Decreasing the amounts of geographically isolated wetlands reduces the number of individuals dispersing and increases the distance individuals must travel between wetlands, decreasing the species' ability to maintain larger and more viable meta-populations.[244]

For all the reasons stated immediately above, the scientific evidence exists to establish the requisite significant nexus between Carolina and Delmarva Bays,[245] Pocosins[246]and other similar coastal depressional wetlands[247] and downstream traditional navigable waters allowing these waters to be defined as waters of the United States by rule.

4. *Northern Vernal Pools[248]*

Northern vernal pools have many physical, chemical, and biological impacts on navigable waters:

- During high precipitation events or in specific landscape positions, northern vernal pools can have surface water connections to adjacent or nearby navigable waters and may provide groundwater input to adjacent waters, shallow aquifers, ephemeral streams, and

[239] Russell, Kevin R. 1999. *Aspects of the Ecology of Worm Snakes (Carphophis amoenus) Associated with Small Isolated Wetlands in South Carolina*. JOURNAL OF HERPETOLOGY. 33(2): 339-344.
[240] Subalusky, Amanda L., Fitzgerald, Lee A., Smith, Lora L. 2008. *Ontogenetic Niche Shifts in the American Alligator Establish Functional Connectivity Between Aquatic Systems.* BIOLOGICAL CONSERVATION, 142: 1507-1514.
[241] Semlitsch, Raymond D., Bodie, J. Russell.1998. *Are Small, Isolated Wetlands Expendable?* CONSERVATION BIOLOGY, 12(5): 1129-33.
[242] Gill, *supra note* 239.
[243] Semlitsch, *supra note* 242.
[244] *Id*.
[245] *See also* Woolford and Carroll (July 2014).
[246] *Id.*
[247] *Id*.
[248] This section is excerpted and summarized from Woolford et al (October 2014) at 11-12.

river networks.

- Northern vernal pools that do not share surface or groundwater connections to navigable waters impact hydrology in river networks by intercepting and storing water before either discharging it slowly or exporting it via evapotranspiration.

- Vernal pool hydrology allows for nutrient retention and nitrogen transformation, and vernal pools likely retain pollutants and toxins and prevent these compounds from entering downstream waters. Soluble compounds, alternative, may be delivered to nearby nabigavle waters through groundwater connections.

- Many types of cyclic colonizing invertebrates adapted to migrate between ephemeral wetlands and permanent water are found in northern vernal pools, and represent an important flow of energy and nutrients into navigable waterways flowing vernal pool dry down.

5. *Western Vernal Pools*[249]

Western vernal pools are unique wetland ecosystems have a variety of significant physical, chemical, and biological impacts on downstream waters due to their hydrology, isolation, and landscape context. These include:

- Western vernal pools typically have predictable hydrologic cycles that regulated run-off flow and volume, nutrient, carbon, and salt export, and facilitate nutrient cycling among uplands, wetlands, and navigable waterways.

- Storage of stormwater and sediment in vernal pools limits erosion and run-off that would otherwise reduce water quality of navigable waters.

- Many western vernal pools are connected to other wetlands as a complex during the wettest season, and may be connected to navigable waters through ephemeral streams, swales, or overland sheet flow, facilitating nutrient, sediment, and organic matter transfer.

- Animals migrating between western vernal pools and navigable waters carry passively dispersing propagules and invertebrates to navigable waters, where they help maintain species and genetic diversity.

6. *Sinkhole Wetlands in Karst Regions*[250]

Sinkhole wetlands occur in topographic depressions, which are formed when limestone bedrock is dissolved and the overlying soil collapses. Sinkhole wetlands in karst regions fit into several categories that have differing hydrologic connections to groundwater, various hydroperiods, and

[249] This section is excerpted and summarized from Woolford et al (October 2014) at 15.
[250] This section is excerpted and summarized from Woolford et al (October 2014) at 25-30; *See also* Woolford and Carroll (July 2014) re southeastern coastal depressional wetlands.

contrasting topography and geography. Compound sinks are typically connected to groundwater systems, while karstic pans are usually isolated. **Sinkhole wetlands of each category generally have significant physical, chemical, and/or biological impacts on downstream waters:**

- Karst wetlands can mediate flooding and stormwater run-off, and reduce peak flows by retaining water on the landscape before it reaches navigable waterways.

- Compound sinks can slow water infiltration aquifers in karstic landscapes and allow for sedimentation and pollutant removal, while karstic pans eliminate water quality deterioration by retaining water and restricting surface water-aquifer connectivity.

- Karstic wetlands transform nutrients and organic compounds, and cycle organic carbon that can be exported to navigable waters via ephemeral streams or aquifer connections to river networks.

- Karst wetlands in the Mammoth Caves region are home to a diversity of invertebrates, including cyclic colonizers that migrate between these wetlands and permanent waters, as well as passively dispersing invertebrates that move among lentic and lotic systems on the feet, fur, and feathers of other animals.

- Some sinkhole wetlands in Virginia are connected to navigable waters by the movement of C. serpentina [Eastern Snapping Turtle], which can be a frequent colonizer of newly inundated waters and is commonly present in permanent sinkhole wetlands (such as some compound sinks); this is likely the case in all karstic regions in the United States.

7. *Nebraska Sand Hill Wetlands*[251]

Ecoregion 44 is named the "Nebraska Sand Hills," and is the largest sand-dune area in the Western Hemisphere. This approximately 12 million-acre region of central and eastern Nebraska contains over 1,000,000 acres of sandhill wetlands (LaGrange 2005). The "other waters" in this region include approximately 177,000 acres of open water and marsh, i.e., permanently and semi-permanently inundated wetland, and 1.13 million acres of wet meadow, i.e., ephemeral and seasonal wetlands (Rundquist 1983). Sandhill wetlands range in size from less than an acre to 2,300 acres, but 80% are less than 10 acres (Wolfe 1984).

Ginsberg (1985) noted that although many of these wetlands and lakes appear to be geographically isolated wetlands, they are predominantly hydrologically connected to and represent an extension of the groundwater, particularly in the eastern and central sandhills and thereby supply base flows to the streams and other waters in the region. These sandhill wetlands developed as groundwater seepage areas in the valleys of wind-deposited sand dunes (Sidle and Faanes 1997). Rundquist et al. (1985) provided evidence of groundwater flow-through in a shallow lake, with the groundwater flowing toward Blue Creek, about 3 miles away. LaBaugh (1986) also documented interconnections and flow between sandhill wetlands and lakes and

[251] This subsection excerpted from Ducks Unlimited 2014 Rule Comments at Section III. *See also* Woolford et al (October 2014) at 35-39.

groundwater as water in this interconnected system flowed toward lower elevations. Novacek (1986) stated that the sandhill wetlands in Nebraska (including wet meadows) are important to water table and aquifer recharge, with the region containing five principal drainage basins that all ultimately empty into the Platte and Missouri rivers. It has also been stated that most sandhill wetlands are also interconnected with the important Ogallala aquifer as well as the local groundwater (Tiner 2002).

Winter (1998) stated that, "groundwater and surface-water interactions have a major role in affecting chemical and biological processes in lakes, wetlands and streams, which in turn affect water quality throughout the hydrologic system." The extent of connectivity between the wetlands, groundwater and downstream flowing waters was provided by Chen and Chen (2004) when they documented that a very high percentage of the flows of the Dismal and Middle Loup rivers was supplied by groundwater. Further evidence of the connectivity with the groundwater is the presence of fens in the region (Steinauer 1995).

Tiner et al. (2002) indicated that most sandhill wetlands are interconnected with the local groundwater and the agriculturally important Ogallala, or High Plains, aquifer. Importantly, in terms of the issue of connectivity of the wetlands with downstream waters via groundwater, Weeks and Gutentag (1984) stated that groundwater from this aquifer discharges naturally into flowing streams and springs, and that the aquifer and valley-fill deposits and associated streams comprise a stream-aquifer system that links the High Plains aquifer to surface tributaries of the Platte, Republican and Arkansas rivers.

In summary, the scientific evidence seems clear that the Sandhill wetlands are, in the aggregate and generally, connected via groundwater linkages to navigable waters and their tributaries in this region of the country. Thus, they should be strongly considered for designation as jurisdictional by rule.

8. *Playa Wetlands, Rainwater Basins, and Platte River Region Wetlands*[252]

Playa Wetlands: Playas are relatively shallow, ephemeral, closed-basin wetlands usually not proximate or adjacent to navigable waters (Figure 12). They occur in high densities in several areas within ecoregion 27, the Central Great Plains, including the Rainwater basin region of Nebraska (see below) where its wetlands are very similar in structure and function to the playas that occur farther south. These shallow, typically circular basins often lie at the lowest points in relatively flat watersheds, and each collects runoff from the surrounding area. About 66,000 playas remain in the relatively flat topographic landscape of the Great Plains of Kansas, Colorado, Oklahoma, Texas, and New Mexico (Playa Lakes Joint Venture http://www.pljv.org; Smith et al 2012; Figure 13). In Kansas, a recent study using improved techniques documented about double the number that had previously been estimated (new estimates of about 22,000 playas), and noted that more than 80% were smaller than 5 acres in size (Bowen et al 2010). They occur in clusters of high density in several distinct areas across the landscape of ecoregion 27, and are dominant components of the landscape in these areas (Bowen et al 2010). For example, the total playa area in west Texas was estimated (Fish et al 2000) to be almost 400,000 acres. Thus, given their numbers, distribution, and structural and functional similarities, the

[252] This section, including figure and citations references, is excerpted from Ducks Unlimited 2014 Rule Comments.

value of playas is most reasonably assessed in the aggregate across the landscapes in which they occur (Johnson et al 2012; Smith et al 2012).

The Ogallala (or High Plains) aquifer underlies about 170,000 square miles and is shared by eight states, including much of the playa region, as well as the Rainwater Basin area of Nebraska. This aquifer is the primary source of water in the region with about 97% being used to support irrigated agriculture (Maupin and Barber 2005), and the water has an economic value of approximately $20 billion (Moody 1990). The aquifer also provides drinking water for about 82% of the region's residents (Maupin and Barber 2005).

Conceptual models have proposed for years that the playas are critical recharge zones for the Ogallala (e.g., Wood 2000). Gurdak and Roe (2009; 2010) recently provided a comprehensive synthesis of the related literature (approximately 175 studies) and concluded that playas are pathways of relatively rapid recharge and provide an important percentage of recharge to the Ogallala aquifer. Thus, playas are, in the aggregate, critical to supplying water to an important, interstate water body, and they therefore impact the water quantity of the underlying aquifer (Gurdak et al. 2009; 2010). Furthermore, Rainwater and Thompson (1994) stated that landscape changes increased water collection in playas and that infiltration had also increased. They further stated that these factors increased the contribution of playas to Ogallala aquifer recharge and that, in some areas, infiltration from playas that receive runoff are the principal source of aquifer recharge.

Understanding that the CWA has no jurisdiction over groundwater, the importance of the aquifer to human health, welfare and economic benefit is therefore not a direct, independent concern of the Act except as it is affected by condition of surface water and wetlands. **However, Weeks and Gutentag (1984) stated that groundwater from this aquifer discharges naturally into flowing streams and springs, and that the aquifer and valley-fill deposits and associated streams comprise a stream-aquifer system that links the High Plains aquifer to surface tributaries of the Platte, Republican and Arkansas rivers, as well as the Pecos and Canadian rivers (Kreitler and Dutton 1984).** Further strengthening documentation of the linkage of wetlands, groundwater, and flowing navigable waters, Slade et al. (2002) showed that channel gain or loss in Beals Creek (draining into the Colorado River basin of Texas) corresponded to discharges from or recharges to the Ogallala aquifer. **Thus, the significant nexus between the playa wetlands and navigable waters is created by their direct linkage through the Ogallala aquifer.**

In addition to the impact that playa wetlands have on the quantity of water moving from the wetlands, through the aquifer, and to navigable waters, they also have an impact on the quality of that water. **Ramsey et al. (1994) showed that playa wetlands improve the water quality of storm runoff, demonstrating that water quality in the playa is better than that found in storm runoff before entering the wetland.** They stated that this wetland function thereby contributes to improving/maintaining groundwater quality in the aquifer, as would be predicted in light of playas being the principal source of aquifer recharge in some areas (Rainwater and Thompson 1994). Thus, as a result of the relationships with navigable rivers in the region (Weeks and Gutentag 1994), playas must also improve water quality in those streams and rivers as well.

Hence, impaired water quality functions of playas would have adverse impacts on the quality of water in the aquifer and linked navigable waters. Increased agricultural application of nitrate fertilizers makes the groundwater more vulnerable to nitrate contamination (Gurdak and Roe 2009) via playa recharge. Belden et al (2012) found that the water in many playas sampled in Nebraska, Colorado, Texas and New Mexico contained elevated levels of pesticides, particularly herbicides. Given the linkage of playas to the Ogallala, the potential impacts of what might be deposited in the playas to the groundwater are clear. In addition, as a result of slow recharge rates, the limited ability of the aquifer to attenuate contaminants such as nitrates, and the prolonged travel times of aquifer water, any potential contamination would have very long duration (Gurdak and Roe 2009) even if corrective action were taken. **Thus, the natural denitrification function of intact playas takes on added significance in relation to the quality of water in the aquifer, and ultimately, to its interconnected flowing waters.**

Rainwater Basin and Platte River Region Wetlands: The Platte River and its major tributaries transect ecoregions 25 (High Plains) and 27 (Central Great Plains), and the Rainwater basin region is in ecoregion 27, along with most of the playas (see above). **In addition to the previously discussed documentation and acceptance of the fact of the hydrologic connectivity between the Platte River, its tributaries, and "other waters" in the region, Chen (2007) noted that the river, alluvial aquifer, and the riparian zone all form a well-connected hydrologic system.** He additionally indicated that water in streams there may come from shallow or deep aquifers depending on evapotranspiration rates, further indicating the connectivity of the components of the aquatic system there.

Millions of waterfowl migrate through the region every year and concentrate on the small percentage of the region's remaining wetlands (approximately 5%) that provide habitat, particularly in the spring. In addition, nearly the entire population of mid-continent sandhill cranes (~500,000 birds) stages there (Krapu et al. 1982; Vrtiska and Sullivan 2009), and it is an important concentration site for the federally endangered whooping crane (Austin and Richert 2005). Although this region is a migration and staging area for the crane species, the situation requires further examination because huge numbers of the sandhill cranes, and non-negligible percentages of the whooping crane, roost at night by standing in the very shallow waters of the Platte River (along about 65 miles of its length in central Nebraska), but they leave the river to use other habitats for feeding and loafing during the day. While the sandhill cranes feed predominantly on waste grain in crop fields (Krapu et al. 1984; Davis 2003; Anteau et al. 2011), the whooping crane spends more time in palustrine wetland habitats (Austin and Richert 2005). Austin and Richert (2005) analyzed habitat use from 1977-99, but did not appear to directly review their data relative to the question of the degree of dependence of whooping cranes on both the riverine habitat and the freshwater wetlands in the sense required to firmly establish a significant nexus as currently proposed.

Folk and Tacha (1990) documented patterns of use of the North Platte River and the region's temporary and semi-permanent palustrine wetlands by sandhill cranes. The North and central Platte River valley provides the primary spring staging habitat for about 80% of the entire midcontinent population of the species (Pearse et al 2010), and the cranes typically roost in the river channel or nearby wetlands for safety during the night. They found that the cranes were

collectively interdependent upon the shallow navigable river and the region's wetlands, providing a biological nexus between the two types of waters. Taken together, these and other studies (Bishop et al 2010; Gersib et al 1989; Pearse et al 2011; Tacha et al 1994) indicate that the Platte River and the wetland of the rainwater basin and surrounding landscape function as a complex of aquatic habitats for a diversity of species, and as the "other waters" of the region are negatively impacted, so too is the integrity of the navigable Platte River.

Thus, playa wetlands, as well as the Rainwater basin wetlands, provide strong evidence of the kinds of linkages (often via important groundwater bodies) and relationships between "other waters" and downstream or navigable waters that can inform significant nexus analyses of aggregated wetlands in these and other regions of the country.

9. *Interdunal Wetlands*[253]

Interdunal wetlands exist along the coastlines of America's oceans and Great Lakes among sand dunes formed by nearshore processes and historically higher water levels. These landscapes have several significant physical, chemical, and biological impacts on navigable waters, including streams, the Great Lakes, and the coastal oceans, including the following:

- Seasonal shifts in the groundwater hydrologic gradient cause exchange between interdunal wetlands and navigable waters, including streams, the Great Lakes, and coastal oceans.

- Fluctuating dunes commonly create temporary connections between interdunal wetlands and navigable waters, stimulating exchange of water, sediments, nutrients, and organic matter.

- Open water interdunal wetlands can sequester incoming suspended solids, as well as attached phosphorus and pollutants such as heavy metals and pesticides, and may prevent them from entering nearby navigable waters.

- Interdunal wetlands support some 1,400 species of living organisms and are extremely important staging and breeding areas for waterfowl, shorebirds, and wading birds that migrate along the Atlantic, Mississippi, and Pacific flyways.

- Many resident birds, mammals, reptiles, and (during times of temporary connection to navigable waters) fish in interdunal wetlands move between these habitat and navigable waters such as streams and rivers, Great Lakes, and coastal oceans, and represent transfers of energy, nutrients, genetic material, and organic matter,

[253] This section is excerpted and summarized from Woolford et al (October 2014) at 49-50.

L. Significant Nexus; Additional Science-based Comments Regarding Connectivity[254]

As is evident from the Connectivity Report and the SAB Connectivity Peer Review Report, the scientific literature clearly documents that many other wetlands and wetland subcategories falling within the proposed rule's "other waters" classification have similar types of significant nexuses with downstream navigable waters. This section highlights some of the science regarding the existence, geographic extent, and general pervasiveness of those avenues of significant nexus. One objective of this summary is to help convey a sense of the cumulative effect of many small, scattered, seemingly isolated impacts to "other waters" ultimately has an impact on downstream navigable waters that can only be considered significant, as evidenced by the current state of the Nation's waters being a reflection of the past cumulative degradation and loss of "other waters."

1. Surface Water Storage and Flood Abatement

Wetlands in any watershed, including physically non-proximate wetlands, serve a critical function in storing and holding water and associated pollutants (including sediment) that otherwise would flow more rapidly and directly toward navigable waters. Thus, wetlands play a significant role in local and regional water flow regimes by intercepting storm runoff and storing and releasing those waters over an extended period, either through surface or groundwater discharges (Mitsch and Gosselink 1986). Floods continue to be the most economically significant natural hazard in the U.S., and have a significant negative impact on national, regional, and local economies, as well as taking a toll on human life, health, and general welfare. *See* Blann et al's (2009) thorough review of the effects of surface and subsurface drainage on aquatic ecosystems. They make an important contribution by collecting and effectively synthesizing information that relates to the effects of drainage, often involving either existing or past "other waters," on the chemical, hydrologic and physical, and biological integrity of downstream waters. Their synthesis underscores the significance of the cumulative impacts of the upstream alterations of water bodies.

Another recent paper (McLaughlin et al 2014) specifically examined geographically isolated wetlands from the standpoint of the current "significant nexus" context. They added to the many others who have found that these kinds of "other waters" moderated the frequency of both very high and very low water tables, and they also buffered stream base flows, thereby demonstrating the significant nexus with flowing waters. This functional connection between geographically isolated wetlands and navigable waters reduces the risk of downstream interests to flood hazards, and also reduces the erosion of stream banks and sediment movement and the physical, chemical, and biological consequences of those alterations to downstream hydrology. Additionally, groundwater exchange is controlled more by wetland perimeter than surface area, indicating the importance of many small wetlands. Importantly, their modeling work verified that given the same surface area of wetlands, landscapes with many small wetlands had more "capacitance" than landscapes with fewer large wetlands. **They conclude that a significant nexus exists as a consequence of the influences of these "other waters," in the aggregate, on regional water tables and regulation of base flows.**

[254] Excerpted from Ducks Unlimited 2014 Rule Comments at Section IV.

The presence of wetlands in watersheds was found to be a significant factor in the reduction of 50- to 100-year floods (Novitski 1978a). In Wisconsin, Illinois, and the northeast U.S., wetland area within watersheds has been shown to be positively correlated with reduction in peak flows (Novitzki 1978a, 1982, 1985; Demissie et al. 1988; Demissie and Khan 1993). Johnston et al. (1990) modeled the relationship between wetland flood storage and flood peak reduction and found that in watersheds with a wetland area of less than 10%, major effects on flood flows were associated with small additional losses in wetland area.

The decrease of 80% of the storage capacity of the Mississippi River floodplain as a result of levees and loss of forested and other wetlands (Gosselink et al. 1981) is widely considered an important contributing factor to the increasing frequency of flooding along the Mississippi River (Belt 1975). Hey et al. (2004) calculated that restoring 4 million acres of former wetlands in the Mississippi River floodplain could create approximately 16.5 million acre-feet of flood storage. Conversely, the loss of existing wetland acreage in the floodplain and watershed would increase flood flows on this navigable river. An increase in discharges from agricultural landscapes, at least in part due to wetland drainage, was shown to be a primary contributing factor in carbon, nutrient, and pesticide exports to the Gulf of Mexico (Raymond et al 2008).

Studies in landscapes with other types of non-proximate wetlands have similarly demonstrated that drainage of wetlands and other areas results in increased peak flows in navigable waters and their tributaries (Allan 2004; Skaggs et al. 1980). Ogawa and Male (1983) employed a hydrologic simulation model to demonstrate that for relatively low frequency floods (those occurring with 100-year interval or greater which are also those with the greatest potential for catastrophic losses) the increase in peak stream flow was very significant for all sizes of streams when wetlands were removed from the watershed. Brody et al. (2007) analyzed 383 non-hurricane flood events in Florida, and their results suggested that property damage caused by floods was significantly increased by alteration of naturally occurring wetlands. Many of these floods were presumably in association with jurisdictional waters.

As with USDA programs in the prairie pothole region, Duffy and Kahara (2011) showed that wetlands restored by the Wetland Reserve Program in the Central Valley of California provided flood storage of 113 billion cubic feet in 2008. They also documented that, in the aggregate, that the palustrine, riparian, and vernal pool wetlands in the region provided flood storage of 4159, 2182, and 2140 cubic meters, respectively. Clearly, loss of wetlands in this region would ultimately increase flood flows in navigable rivers like the Sacramento and San Joaquin.

Viewed on the whole, studies like these provide examples of the general importance of wetlands in flood attenuation. The aggregate contributions of individual wetlands distributed across a regional landscape, and often located within topographically higher portions of the watershed and non-proximate to other jurisdictional waters, can nevertheless exert a very significant effect on flood volumes. Thus, many physically non-proximate wetlands are in fact adjacent in functional sense, and exhibit a significant nexus with, navigable waters that are clearly jurisdictional from the perspective of the Clean Water Act and federal interests such as flood and pollution control.

2. Groundwater Recharge and Base Flow Maintenance

Attention is being increasingly focused on the growing problems associated with rapidly increasing use and diminishing supply of groundwater resources in many areas across the U.S. (Russo et al 2014). That being the case, the proposed rule should keep in mind the role that surface wetlands, particularly "other waters," play in groundwater recharge.

There is a much greater degree of linkage between wetlands, including aggregations of physically non-proximate wetlands, and navigable waters via groundwater connections than is generally appreciated. Wetlands very often contribute to groundwater recharge, and this groundwater then continues to move downslope toward flowing streams and rivers and thus ultimately contributing water to jurisdictional waters (Ackroyd et al. 1967; Winter et al. 1998).

Winter (1998) provided a good overview of the interconnections between streams, lakes, and groundwater systems. He concluded, "Groundwater interacts with surface water in nearly all landscapes," and provided examples from glacial, dune, coastal, karst, and riverine systems regarding these interactions. *See also* Hayashi and Rosenberry (2002). Woessner (2000) provided an overview of the interactions between groundwater and flowing waters in a fluvial plain setting, and highlighted the significant potential that exists for pollution of surface waters, such as jurisdictional waters, if groundwater becomes contaminated. **Other review papers and individual studies typically demonstrate that not only do connections almost always exist between wetlands, groundwater, and streams and rivers, but also that these interconnections are usually complex.**

Gonthier (1996) documented the linkage and flow of water between an extensive bottomland hardwood wetland in Arkansas (a Ramsar-designated Wetland of International Importance), local flow of groundwater, and the Cache River, up to ~2 miles away. **However, the farther the wetland from the river, the more likely the water from the wetland was to enter groundwater flowing to the deeper Mississippi Alluvial Valley aquifer which discharges flows to major navigable rivers, including the Cache, White and Mississippi.**

Flow of water and its chemical constituents from wetlands, via groundwater, to the water of the Great Lakes (i.e., TNWs) is extensive and important and has been frequently documented. Doss (1993) examined a coastal wetland complex in Indiana on the south shore of Lake Michigan and found strong hydrologic connectivity between the many interdunal wetlands and the lake, noting that groundwater discharge to Lake Michigan was the only significant loss of water from the wetlands besides evapotranspiration. Holtschlag (1997) evaluated Michigan's entire Lower Peninsula, and estimated that groundwater discharge constituted 29.6 to 97.0 percent of the annual percentage of stream flow in the region. Holtschlag and Nicholas (1998) estimated that 67.3% of stream flow in the Great Lakes basin is groundwater discharge, and represents 22-42% of the Great Lakes water supply, its largest component. A significant portion of this groundwater is likely the result of recharge from wetland basins. In Wisconsin, groundwater flow into Lake Michigan is between 7 and 11% of the river flow, a significant part of the lake's total water budget (Chekauer and Hensel 1986).

In the case of vernal pools in California, Hanes and Stromberg (1996) reported that wetlands

with discontinuous or a weakly developed hardpan had high rates of seepage and therefore contributed to subsurface flow. Tiner et al. (2002) stated that during the wet seasons these geographically isolated wetlands formed hydrologically linked complexes that could drain into perennial streams.

Non-proximate wetlands that exist in karst topography are often directly linked to subsurface water flows of relatively high velocity, moving easily through underground channels, caves, streams, and cracks in the rock. There tend to be many springs and seeps, many with surface connections, which are the source of some large streams (Winter et al. 1998), and Winter (1998) stated that groundwater recharge in karst terrain is efficient. Entire streams can go subsurface and reappear in other areas, connect directly with wetland basins, and contaminants are easily mobilized in these regions.

In addition to the direct hydrologic connections that exist between groundwater and streams, the nature of the groundwater discharge to streams can have impacts such as influencing benthic productivity (Hunt et al. 2006). The nature of recharge from wetlands to this pool of groundwater can therefore create an even more complex significant nexus between the wetlands (frequently non-proximate) and the navigable water as a result of the interacting hydrologic and biologic relationships.

Clearly, demonstrated linkages between wetlands, groundwater and navigable waters within a broad variety of wetland categories and across a diversity of landscapes and regions, indicate that adjacency and significant nexus should be interpreted from a functional perspective if water quality is to be protected as intended by the CWA.

3. Water Quality Relationships

It is well established that wetlands of all types have the capability to improve water quality by trapping, precipitating, transforming, recycling, and/or exporting many of its chemical and waterborne constituents (van der Valk et al. 1978; Mitsch and Gosselink 1986). They serve as a natural buffer zone between upland drainage areas and open or flowing water. They can improve water quality by removing heavy metals and pesticides from the water column, and by facilitating the settling of sediment to which many pollutants are attached. Wetlands remove excess nutrients, e.g., phosphorus and nitrogen compounds, by incorporating them into plant tissue or the soil structure and by fostering an environment in which microbial and other biological activity pulls these compounds out of the water, thereby enhancing water quality.

Importantly, water quality contributions by wetlands can occur no matter where the wetland occurs on the landscape, and non-proximate waters also serve as chemical and nutrient sinks, trapping and holding these compounds (Mitsch and Gosselink 1986; Mitsch et al 1999). Retention time, obviously prolonged when waters flow into a wetland before leaving via surface runoff or through infiltration into subsurface groundwater that flows to a river, has been shown to be the most important factor in promoting nitrogen processing (Jansson et al 1994). For example, it has been shown that when water naturally filters through Delmarva bays (a category of geographically isolated wetlands) instead of being circumvented through drainage canals to a navigable water, it flows through groundwater pathways to the Chesapeake Bay with much of its

nitrogen having been removed (Laney 1988; Shedlock et al. 1991; Bachman et al. 1992; Fretwell et al. 1996). Nitrogen is one of the principal pollutants of concern in the waters of the Chesapeake Bay, and in many other waters that supply domestic, municipal, irrigation and commercial needs. In Michigan, Whitmire and Hamilton (2005) concluded that a remarkably small area of wetland can strongly influence water quality relative to nitrate and sulfates. Some of their study wetlands were connected to the groundwater system. In Lake Michigan and Lake Huron, the biota associated wetlands near outlets from agricultural drainage systems were different than that of coastal wetlands not close to such outlets (Schock et al 2014). These differences were associated with increased levels of nitrates, turbidity, and other chemical characteristics of the drainage water, thereby providing another example of the impacts related to upstream drainage of "other waters" that could have intercepted and improved water quality.

Lin and Norman (2003) demonstrated that wetlands in California were able to remove an average of 69% of the selenium contained within agricultural runoff they received, thereby providing a natural mechanism for reducing the availability of this trace element which becomes toxic if bioaccumulated in the food chain. Weller et al. (1996) demonstrated that riparian wetlands of all types in eight watersheds of Lake Champlain were important in reducing phosphorus loading of surface waters.

With increased flows being a direct result of wetland drainage and artificially increased connectivity with downstream waters, those increased flows in turn increase stream incision, the rate and nature of channel evolution, and the rate of erosion and sediment transport (e.g., Simon and Rinaldi 2006). Bellrose et al. (1983) and Mills et al. (1966) also described how sedimentation, including stream bank erosion, has created navigation and ecological problems on the Illinois River. One group of researchers stated that "discharge is a master variable that controls many processes in stream ecosystems" (Doyle et al 2005).

Fennessy and Craft (2011) examined the relationships of Farm Bill wetland conservation programs to nutrient and sediment loads contributed by the entire Glaciated Interior Plains, (encompassing much of a seven-state area from Minnesota to Ohio) to the Mississippi River and Gulf of Mexico. Wetlands involved included about 260,000 acres of a variety of wetland types scattered throughout the region. They estimated that these wetlands reduced the region's contribution of nitrogen, phosphorus, and sediment to the Mississippi River by 6.8%, 4.9%, and 11.5%, respectively. Given that excess nitrogen is widely accepted as the primary cause of the hypoxic zone (Moreau et al. 2008), these wetlands clearly exhibit a significant nexus and provided significant benefit to the Mississippi River and Gulf of Mexico. However, it is important to recognize that if analyzed on the basis of only single point of entry watersheds, they would likely not have been determined to be jurisdictional wetlands, and this benefit to the Mississippi River and Gulf would be lost if those waters were significantly impacted by the draining or filling of the wetlands. A disproportionately high percentage of the nitrate load that the Mississippi River exports to the Gulf of Mexico comes from this region (Hey 2002), with the role of wetlands (i.e., "other waters"), and loss of that function along with loss of wetlands from across the landscape, being a significant factor (Hey et al 2012). *See also* Diaz and Rosenberg 2008; Duffy and Kahara 2011.

Human-induced eutrophication of lakes and rivers is a growing issue across the U.S., with total nitrogen and total phosphorus for all EPA nutrient ecoregions exceeding reference median values (Dodds et al 2009). In light of the scientific evidence, it is evident that loss of wetlands in the "other waters" class, in the aggregate, has played a significant role in this long-term trend.
There is a vast body of scientific literature dealing with the relationship of wetlands (including those that are physically non-proximate) and water quality, and the literature cited above is only a small sample of what is available on the topic. As Whigham and Jordan (2003) concluded in a review paper, from a water quality perspective, "so-called isolated wetlands are rarely isolated" from other waters of the United States.

Human Health Issues: A few examples of pollution of waters are informative regarding the risks associated with failing to recognize that a significant nexus exists between wetlands and other physically non-proximate waters, groundwater, and navigable waters, and failing to view them as a single system in determining CWA jurisdiction. Additionally, from the standpoint of interpreting these risks, some examples of "artificial" waters nevertheless serve as instructive surrogates for the potential water-borne pollution pathways for natural wetlands. For example, Ryan and Kipp (1997) assessed the impact of liquid wastes discharged from an enriched uranium recovery plant to evaporation ponds in Rhode Island. They identified chemical and radioactive constituents that infiltrated from the ponds to the groundwater aquifer, creating a plume that ultimately discharged into the Pawcatuck River.

Superfund sites offer many examples of the hazards associated with the pollution of non-proximate waters, whether natural or artificial, to navigable waters. In Macomb County, Michigan, at a 100-acre site at which effluent from a waste oil reclamation facility was held in ponds (EPA Superfund ID No. MID980410823), groundwater was found to be contaminated with volatile organic compounds which flowed toward business and residences, causing residents to use bottled water for potable purposes. Fish collected in the nearby Clinton River had elevated PCB levels.

The Vertac site in Arkansas (EPA RCRA ID No. ARD000023440) involved the contamination of an aquifer with dioxins, furans and other chemicals that eventually contaminated Bayou Meto, a traditionally navigable waterway. White and Seginak (1994) documented that as a result of the dioxins and furans in Bayou Meto, wood ducks breeding there experienced suppressed nest success, hatching success, and duckling production. Teratogenic effects, such as crossed-bills, were documented at the sites with the highest levels of contamination. Similar situations of contamination of navigable waters as a result of linkages to non-proximate waters and groundwater are unfortunately not uncommon.

More recently, concerns have arisen over coal ash settling ponds and their nexuses to navigable and other waters. At a site adjoining Lake Michigan and the Indiana Dunes National Seashore in northwest Indiana, Cohen and Shedlock (1986) noted elevated levels of boron, arsenic, and molybdenum in groundwater associated with a coal ash pond. Subsequent to the 1.1 billion-gallon ash release from holding ponds in Tennessee, the Gibson plant in Indiana has come under scrutiny as a result of boron concentrations (reported to cause nausea and diarrhea, among other potential adverse health effects) increasing in drinking water wells of East Mount Carmel (www.courier-journal.com February 23, 2009). Significantly elevated concentrations of selenium

(teratogenic and toxic at high concentrations) in an associated cooling lake caused a closure to public fishing and raised concerns about nesting endangered least terns. Our understanding is that the EPA has been assessing the risks associated with coal ash more closely. While the question of the level of hazard associated with coal ash is not directly at issue with respect to the CWA, we encourage the EPA to look to those situations as examples of "artificial" physically non-proximate surface waters that can provide information and perspectives on the relevant question of the many avenues of significant nexus between non-proximate and other waters that exists in regions across the country.

Finally, harmful algal blooms are an increasing water quality problem that clearly has significant human health and economic implications (Dodds et al 2009; Falconer I.R. 1999). This problem has been exacerbated by the loss of the many, often small, isolated wetlands from across the landscape which, when protected, sequester the nutrients (phosphorus and nitrogen) that lead to the unnatural blooms. High phosphorus loading are primarily responsible for the resurgence of algal blooms in Lake Erie (International Joint Commission [IJC] 2014). Much of the phosphorus input comes with runoff during spring snowmelt and heavy precipitation events (IJC 2014), much of it coming from agricultural operations south of the west end of the lake in Ohio. Ohio has lost more of its wetlands (90%) than any other state except California (91%; Dahl 1990), and it is a reasonable presumption that many of those wetlands would have been classed as "other waters" and if they were still on the landscape they would intercepted some of that runoff and processed the nutrients it contained, thereby benefitting the integrity of Lake Erie.

4. Biological Nexus

Some avian species that spend significant time daily on saltwater (navigable) habitats are similarly dependent upon the presence of regional freshwater wetlands for purposes of osmoregulation (Woodin 1994). Some examples of such species include: black ducks in the northeast and mid-Atlantic coast and Chesapeake Bay that also depend upon inland freshwater wetlands (see Morton et al. 1989); California gulls using hypersaline Mono Lake and freshwater wetlands in southern California (Mahoney and Jehl 1985); and white ibises using estuarine rookeries and requiring freshwater wetland-derived prey for osmoregulation (Bildstein et al. 1990). Tens of thousands of waterfowl winter on and near the Great Salt Lake (Vest and Conover 2011), and some, such as northern shovelers and green-winged teal, feed on invertebrates (brine shrimp and brine flies) in the lake. However, both species are dependent upon the availability of freshwater wetlands for osmoregulatory purposes in order to use the food resources and habitats of the Great Salt Lake (Aldrich and Paul 2002). Thus, a diminishment or degradation of freshwater wetlands in the vicinity of the lake would translate to a diminishment of the biological integrity of that navigable water. Unfortunately, the research has not yet been conducted that would clearly show how distant those two species would fly to make use of freshwater wetlands.

We believe that, as shown clearly by the examples of the redheads and lesser scaup on the Gulf Coast, the dependence upon *both* navigable waters and non-proximate wetlands can constitute a significant nexus. In these cases, without the wetlands, the species would not occupy the region as a whole and the biological integrity of the navigable waters would therefore be impacted.

Within-season use of both categories of waters by examples of other migratory (not migrating) birds demonstrates similar dependency and a similar nexus.

Changes to flow regimes of navigable waters that result at least in part from degradation and loss of "other waters" also have a direct impact upon the biota of the navigable waters. Some species, for example, can be eliminated as a result of flows that are increased in magnitude and/or frequency (Allan 2004). Conversely, lower base flows that result from wetland drainage and reduced infiltration to the subsurface water that discharges to navigable waters also have a direct effect on the habitability of the latter for many taxa.

Numerous studies of amphibians have documented that the loss and degradation of "other waters" can affect population size, distribution, and movement as a result of the cumulative impact of the loss of "other waters" (e.g., McIntyre et al 2014; Rittenhouse and Semlitsch 2007; Schalk and Luhring 2010; Scott et al 2013). Where these populations and effects occur near navigable waters, the biological integrity of the navigable waters would therefore be impacted by the impacts to the "other waters."

M. The 2003 and 2008 Guidances leave millions of acres of lakes, potholes, and wetlands at risk of pollution and destruction.

The current 2003 and 2008 guidance documents, as well as the proposed rule's case-specific significant nexus test for "other waters," leave millions of wetland acres at risk nationwide. EPA acknowledged in its economic analysis of the 2011 draft guidance that "[s]ince *SWANCC*, no isolated waters have been declared jurisdictional by a federal agency." [255] Our review of several districts shows no indication so-called isolated waters such prairie potholes and playa lakes are receiving protection. [256]

EPA Region 8 staff reported in 2009 that they are losing protections for prairie potholes, playa lakes, and vernal pools. They report that Army Corps Sacramento, Omaha, and Albuquerque Districts –covering Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming, and 27 Tribal Nations – failed to assert jurisdiction in nearly 72% of their jurisdictional calls between June 2007 and August 2008, and that *SWANCC, not Rapanos,* was cited as the basis for lack of federal jurisdiction on 88% of these non-jurisdictional determinations. In numerous instances, these findings of no jurisdiction ignored important shallow sub-surface connections. [257]

At risk waters in the West include those that connect to TNWs and IWs through a ground water rather than a surface water connection. The "Lost" river drainages in eastern Idaho include 73 streams within a 5500 square mile area.[258] The rivers empty into the Eastern Snake Plain

[255] U.S. Environmental Protection Agency, *Potential Indirect Economic Impacts and Benefits Associated with Guidance Clarifying the Scope of the Clean Water Act Jurisdiction*, at 3 (April 27, 2011).
[256] *See, e.g.*, Earthjustice, et al. *Courting Disaster: How the Supreme Court Has Broken the Clean Water Act and Why Congress Must Fix It.* (April 2009), at 6-7 ("isolated" but navigable-in-fact skiing lake); 8-9 (North Dakota prairie potholes).
[257] 2009 EPA Inspector General Report at 9-10.
[258]EarthJustice, NWF, NRDC and Sierra Club, "Reckless Abandon" 12 (2004).

Aquifer, an underground water body twice the size of Lake Erie.[259] Eventually, the Aquifer discharges to the Snake River, itself a TNW, but also a major tributary to the Columbia River. As far back as 1985, the Walla Walla Corps District documented fishing, hunting, recreation, and agriculture connections to interstate and foreign commerce that established Clean Water Act jurisdiction over the Lost River drainages.[260] Based on the 2003 *SWANCC* Guidance, the Corps ultimately designated some of the Lost Rivers, including the Big Lost, but not the Little Lost, to be jurisdictional as TNWs. Others, including the Little Lost, should qualify as a TNW because of kayaking and guided recreation. The ESA-listed bull trout inhabits a number of these drainages as well.[261]

In the wake of the *2003 SWANCC* Guidance, the Albuquerque Corps District has disclaimed jurisdiction over entire "isolated" or "closed" basins in New Mexico, including the Sacramento, Yseltano Canyon (Tularosa Creek and tributaries), the Mimbres, the San Augustine Plains, Santa Clara Canyon, Estancia, Jornado del Muerto, and the Tularosa River Basins. [262] The New Mexico Department of Game and Fish noted the *SWANCC*-induced risk to these basins in a 2003 letter to EPA noting that about 20% of New Mexico's waters could be considered within closed basins, and "[m]ore than 84 miles of perennial and 3900 miles of intermittent waters exist within these close basins, representing over 14% of the perennial and intermittent waters in the state."[263]

In 2007, the Corps found an eight-acre playa in Colorado's Washington County non-jurisdictional because it was "isolated, … surrounded by uplands, … 4000-5800 feet from any potentially jurisdictional tributary, and [prior to *SWANCC*, likely] regulated solely based upon the presence of migratory birds."[264] The Corps made no effort, even though its determination was made in 2007, after *Rapanos*, to determine whether the playa, alone or aggregated with similarly situated wetlands, had a significant nexus to other waters of the United States.

Over 60% of Montana's mapped wetlands, accounting for almost 25% of the state's wetlands acreage, may be considered geographically "isolated" and at continued risk of losing Clean Water Act protections, even under this proposed rule.[265]

In finalizing this rule, we urge the agencies to consider all the scientific literature, as well as other documentation of physical, chemical, and biological connectivity, that is presented herein and in the administrative record.

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[259] *Id.; see also,* Idaho National Laboratory Oversight Program, State of Idaho, *The Eastern Snake Plain Aquifer* 2-3 (May 2005) *available at: https://www.deq.idaho.gov/media/552772-newsletter_0505.pdf*

[260] *Id.* 13 *citing Initial Report on Isolated Waters in the State of Idaho Subject to Clean Water Act Jurisdiction,"* Walla Walla District, April 26, 1985.

[261] *Id.; See, e.g.*, USFS, Bull Trout Final Critical Habitat Justification, Chapter 28 (2010), *available at* http://www.fws.gov/pacific/bulltrout/pdf/Justification%20Docs/BTChapter28.pdf.

[262] *Imperiled Treasures, supra,* at 13-14.

[263] *Id.* at 14; *Reckless Abandon, supra,* at 7 *citing* Letter from Larry G. Bell, Commissioner, New Mexico Department of Fish and Game, to U.S. EPA, April 15, 2003.

[264] Buechler (2010), *supra,* at 15.

[265] *See* Vance, Linda K. 2009 *Geographically Isolated Wetlands and Intermittent/Ephemeral Streams in Montana: Extent, Distribution, and Function.* Report to the Montana Department for Environmental Quality and the U.S. Environmental Protection Agency. Montana Natural Heritage Program, Helena, Montana.

N. For the first time, the proposed rule is expressly excluding many ditches and other water features from CWA jurisdiction.

In the interest of increasing clarity and certainty about the scope of the Clean Water Act, we support the agencies' proposed list of waters to be explicitly excluded from jurisdiction by rule. We support the agencies' proposal to explicitly exclude erosional and artificial water features such as gullies, rills, non-wetland swales, small ornamental waters, water-filled depressions incidental to construction activity, among others. Expressly making these kinds of waters non-jurisdictional by rule should help convey clarity and address many of the concerns of important segments of the landowning public and, in particular, the farming and ranching communities.

Here, as the agencies note, they are clearly "drawing lines and concluding that certain waters and features are not subject to the jurisdiction of the Clean water Act. 79 Fed. Reg. at 22218. The proposed rule goes further in excluding waters than previous regulatory guidance has gone as set forth in the Corps' 1986 preamble language at 51 Fed. Reg. 41206, 41217 (November 13, 1986) and the 1988 EPA preamble language at 53 Fed. Reg. 20764 (June 6, 1988).

1. Further clarification of excluded erosional features and other waters must not be at the expense of ephemeral streams and groundwater connections.

We applaud the agencies' efforts at 79 Fed. Reg. 22218-19 to clearly distinguish between regulated tributaries on the one hand, and excluded ditches, gullies, and rills on the other. We support the agencies exclusions for and definitions of gullies, rills, and non-wetland swales, essentially as erosional features that lack an Ordinary High Water Mark (OHWM). We encourage the agencies to continue outreach to landowners to clarify these and related exclusions. We caution, however, that further clarification must be consistent with and not at the expense of the science and the goals of the CWA. **Further clarification between excluded erosional features such as gullies and ephemeral streams must not be addressed by excluding ephemeral streams from CWA jurisdiction.**

With respect to ditches, it is critically important that the agencies stand by their proposed rule, existing guidance, legal and regulatory precedent, and the science and continue to regulate *as tributaries* ditches created by altering wetlands and streams that function as tributaries. With respect to "upland" ditches excluded by (b)(3), we question the proposal to exclude "upland" ditches that have less than year-round flow. The agencies acknowledge that this perennial flow regime is proposed because it is "familiar to the public and agency field personnel," not because it is a scientifically sound jurisdictional line drawing. 79 Fed. Reg. at 22219. To satisfy the CWA objectives to maintain and restore the physical, chemical, and biological integrity of the nation's waters, this ditch exclusion should properly be limited to upland ditches with less than intermittent flow.

We also support the agencies' express exclusion of groundwater, recognizing that the agencies "have never interpreted "waters of the United States" to include groundwater." *Id.* at 22218. We note, however, that it is scientifically appropriate and necessary that groundwater be recognized as among the most important types of connectivity that exists

between adjacent, neighboring, and "other waters" and tributaries, TNWs, and IWs. The agencies must recognize at least shallow groundwater as an avenue of documenting significant nexus despite not being jurisdictional waters in their own right. For example, a "gully" or "arroyo" connected via ground water to a tributary of a TNW, and which flows in response to storm events, likely qualifies as a waters of the United States.[266]

Along these lines, we strongly support the agencies' preamble clarification that even when not jurisdictional waters, non-wetland swales, gullies, rills and specific types of ditches may still be a surface hydrologic connection for purposes of the proposed definition of adjacent under paragraph (a)(6) or for purpose of a significant nexus analysis under paragraph (a)(7). We also support the clarification that these geographic features may function as "point sources" under the CWA such that discharges of pollutants to waters through these features would subject to CWA permitting requirements such as CWA section 402. 79 Fed. Reg. at 22219.

X. Clarifying and Restoring Clean Water Act Protections Fosters Strong Local Economies and Millions of Jobs.

Even EPA's conservative economic analysis demonstrates that this rule clarifying and restoring clean water protections is good for the economy. "Overall, a comparison indicates that the benefits justify the costs of this proposed action."[267]As EPA and Corps economic analysis notes, the definition of "waters of the U.S." does not itself impose direct costs. EPA estimates the indirect costs and benefits of implementing the proposed rule as compared to implementation of the existing guidance."[268]

The agencies estimate a 3% change in overall CWA jurisdiction from the existing guidance will result in indirect costs associated with some additional CWA 404 and 402 permitting costs, including wetland and stream mitigation (along with administrative costs), and CWA 311 oil spill implementation. The total annual indirect cost is estimated to be $133.7 to $231 million. [269] EPA's estimated annual indirect benefits of $300.7 million to $497.6 million are based primarily on estimates of ecosystem services flowing from protected or mitigated aquatic resources as a result of this increased compliance, as well as government savings on enforcement expenses:

> Benefits that accrue from this action include the value of the many ecosystem services provided by the small streams, wetlands, and other open waters protected by the many CWA provisions that would apply to them. These waters provide habitat and biodiversity, support recreational fishing and hunting, filter sediment and contaminants, reduce flooding, stabilize shorelines and prevent erosion, recharge ground water, and maintain biogeochemical cycling. Other benefits include government savings on enforcement expenses through reduced need for costly jurisdictional determinations where jurisdiction has been unclear under the current interpretation of the existing regulation. Business and government may

[266] *See, e.g., Quivira Mining, supra.*
[267] Economic Analysis of Proposed Revised Definition of Waters of the United States (March 2014) at 32.
[268] Economic Analysis of Proposed Revised Definition of Waters of the United States (March 2014).
[269] *Id.* at Exhibit 16.

also achieve savings from reduced uncertainty in where CWA jurisdiction applies. *Id*. at 32.

We cannot resist noting that the private sector mitigation banking industry with its jobs and other fiscal contributions to local economies survives and thrives on a broad, strong, and strictly enforced Clean Water Act.[270]

The agencies' benefit estimates are solidly supported by other economic analyses. Some of these are summarized here, as well as in the economics considerations discussion above (particularly with respect to flood storage and avoided flood damage costs. Costanza et al (2014) estimated that the value of ecosystem services for "inland wetlands" averaged $25,682/ha/yr., significantly higher than their 1997 estimates, in part because of the continued loss of those wetland habitats. For comparison, the value of the services provided by the navigable waters themselves (included within "rivers and lakes") averaged only $4,267/ha/yr.

Healthy wetlands and streams are economic engines for local recreation-based economies. Every year 47 million Americans head to the field to hunt or fish. For example, the American Sportfishing Association reports that anglers generated more than $201 billion in total economic activity in 2011, supporting more than 1.5 million jobs.[271] The U.S Fish and Wildlife Service estimated that duck hunting in 2006 had a positive economic impact of more than $2.3 billion, supporting more than 27,000 private sector jobs.[272]

As Western Resource Advocates notes, clarifying and restoring Clean Water Act protections will foster the local economies of the western mountain states. Through the final rule, the agencies will be able to confirm jurisdiction for many more headwater rivers and streams that support economically important river recreation. In some rural, mountain communities, river recreation and related activities generate the largest share of the local economy. Indeed, throughout the headwaters states, river recreation, including boating, fishing and wildlife watching, represent billions of dollars in commerce:[273]

- In the Colorado River Basin portion of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, 2.26 million people participated in water sports in 2011, spending $1.7 billion that generated $2.5 billion in total economic output.[274]

- Commercial guides take rafting clients on numerous sections of the Green, Yampa, and Dolores Rivers in Colorado and Utah, the San Juan River in New Mexico and Utah, and the Cache La Poudre, Arkansas, Gunnison and Upper Colorado Rivers in the state of Colorado.

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[270] *See* National Mitigation Banking Association website and members list *available at* *http://www.mitigationbanking.org/index.html* (last visited November 14, 2014).
[271] American Sportfishing Association, *Sportfishing in America* (January 2013).
[272] Economic Impact of Waterfowl Hunting in the United States, Addendum to the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, November 2008. US Fish and Wildlife Service.
[273] Western Resource Advocates 2014 Rule Comments.
[274] SOUTHWICK ASSOC., ECONOMIC CONTRIBUTIONS OF OUTDOOR RECREATION ON THE COLORADO RIVER & ITS TRIBUTARIES (May 3, 2012) (Table E-3), *available at* http://protectflows.com/wp-content/uploads/2013/09/Colorado-River-Recreational-Economic-Impacts-Southwick-Associates-5-3-12_2.pdf.

- The Colorado River Outfitters Association 2013 annual assessment reports almost $57 million in direct expenditures for commercial rafting in the state, with the overall economic impact estimated at over $145 million.[275]

- Companies like Renaissance Adventure Guides[276] in Colorado offers classes to teach kayaking on the Colorado River, and to teach swiftwater rescue in the Waterton Canyon reach of the Upper South Platte River, upstream of Denver, CO, while Arizona Outback Adventures takes kayakers on trips down the Salt River.[277]

- Cities in Colorado bordering rivers host water competitions on surprisingly small streams. In 2010, there were 30 whitewater parks across the state.[278] For example, Vail uses Gore Creek, tributary to the Eagle River which is tributary to the Colorado River above its confluence with the Gunnison; the recent Mountain Games event attracted 58,000 spectators who spent $4M.[279] Golden pioneered a summer whitewater competition on Clear Creek, tributary to the South Platte;[280] Boulder hosts kayak competitions on Boulder Creek. Utah has one park, in Ogden,[281] while Nevada has at least three, in Reno,[282] Sparks,[283] and Carson City.

The 2011 U.S. Fish and Wildlife survey on freshwater fishing expenditures reports that 2.2M anglers, 16 years old and up, fished in Arizona, Colorado, New Mexico, Nevada and Utah, with between 16 and 23% of these recreationists coming from out of state to do so. For the equipment

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[275] Colorado River Outfitter's Association, *Commercial River Use in the State of Colorado, 1988-2013: 2013 Year End Report*, *available at* http://www.croa.org/wp-content/uploads/2014/05/2013-Commercial-Rafting-Use-Report.pdf.

[276] http://raguides.com/ (last visited Oct. 8, 2014).

[277] Arizona Outback Adventures Half-Day Kayaking Tour, http://aoa-adventures.com/guided-half-day-kayaking-tour/ (last visited Oct 1, 2014). Note that the Salt River above Roosevelt Lake is seasonal, with paddling limited to March-May in most years. Salt River Report, http://southwestpaddler.com/docs/salt2.html (last visited on Oct. 1,2014). Below Phoenix' wastewater treatment plant discharge, the river is effluent dependent, both due to seasonal flows and extensive diversions for the Salt River Project. Joseph R. Gebler, Water Quality of Selected Effluent-Dependent Stream Reaches in Southern Arizona as Indicated by Concentrations of Periphytic Chlorophyll a and Aquatic-Invertebrate Communities (USGS 1998), *available at* http://pubs.er.usgs.gov/publication/wri984199.

[278] Pete Gauvin & Wendy Lautner, *California's Dearth of Whitewater Parks*, CALIFORNIA'S ADVENTURE SPORTS JOURNAL, May 4, 2010, *available at* http://adventuresportsjournal.com/water_sports/kayaking/california%E2%80%99s-dearth-of-whitewater-parks.

[279] Melanie Wong, *GoPro Mountain Games in Vail Draw Record Crowds*, VAIL DAILY, June 13, 2014, *available at* http://www.vaildaily.com/news/sports/11810089-113/games-vail-gopro-crowds. These events appear to be growing. A few years earlier, the Games attracted 30,000 people who spent $3M. COLEY/FORREST INC. FOR NORTHWEST CO. COUNCIL OF GOV'TS FOUND., INC., WATER AND ITS RELATIONSHIP TO THE ECONOMIES OF THE HEADWATERS COUNTIES 24 (2011), *available at* http://nwccog.org/docs/qq/QQStudy_Report_Jan%202012.pdf.

[280] Colorado Whitewater Competition, http://www.coloradowhitewater.org/racing-competition. (last visited on Oct. 1, 2014).

[281] Ogden's Kayak Park – Ogden City, http://www.ogdencity.com/en/community/parks/kayak_park.aspx (last visited Oct. 3, 2014).

[282] Truckee River White Water Kayak Park, Reno, NV, http://www.visitrenotahoe.com/reno-tahoe/what-to-do/water-adventures/kayak-park (last visited Oct. 3, 2014).

[283] White Water Park at Rock Park, http://www.cityofsparks.us/residents/parks-and-facilities/whitewater-park-rock-park (last visited Oct. 3, 2014).

and trips, these anglers spent $2.4 billion and their expenditures supported almost 38,000 jobs.[284] These figures include both guided and non-guided trips, and show that angling represents a significant contribution to these states' economies and to interstate commerce. Even more so than boating, a significant percentage of fishing trips occur on smaller headwaters rivers and streams. For those anglers interested specifically in fly fishing for native trout in this region, for example, all of the options are on relatively small streams, such as those in Rocky Mountain National Park.

Another indication of the economic implications of protecting the Nation's water resources is revealed in the example of the actions taken by New York City to initiate a $250 million program to acquire and protect up to 350,000 acres of wetlands and riparian lands in the Catskill Mountains to protect the quality of its water supply rather than constructing water treatment plants which could cost as much as $6-8 billion. (Dailey et al. 1999). In South Carolina, a study showed that without the wetland services provided by the Congaree Swamp, a $5 million wastewater treatment plant would be required (www.epa.gov/owow/wetlands 2003). *See* Ducks Unlimited 2014 Rule Comments.

The algal blooms that cause health problems also come at high economic costs. For example, Dodds et al (2009) estimated that the total annual cost of the eutrophication of U.S. freshwaters was $2.2 billion. This estimate included recreational and angling costs, property values, drinking water treatment costs, and a conservative estimate of the costs of the loss of biodiversity. Polasky and Ren (2010) cited research that estimated that if two lakes (Big Sandy and Leech) in Minnesota had an increase in water clarity of three feet, lakefront property owners would realize a benefit of between $50 and $100 million. Southwick Associates (2006) estimated that the present value of Saginaw Bay coastal marshes for active recreational use was $239 million, or approximately $10,000 per acre. *See* Ducks Unlimited 2014 Rule Comments.

By any measure, clarifying and restoring clean water protections for America's waters is a good investment for healthy communities and a healthy economy.

CONCLUSION

National Wildlife Federation strongly supports this "waters of the United States" rulemaking as necessary and the best chance in a generation to clarify which waters are – and are not – "waters of the United States" protected by the 1972 Clean Water Act. We urge the agencies to move expeditiously to finalize the important rule.

We strongly support the overall approach to the proposed rule, and its categorical findings of jurisdiction for tributaries and adjacent waters as both scientifically and legally sound. We respect the agencies' efforts to draft clarifying definitions of tributary, adjacency, and significant nexus that are also consistent with the science, the legal precedent, and the objectives of the Clean Water Act. We urge the agencies to carefully craft a final rule that remains consistent with these principles.

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[284] U.S. FISH & WILDLIFE SERV., NATIONAL SURVEY OF FISHING, HUNTING, AND WILDLIFE-ASSOCIATED RECREATION (Tables 56 and 60), *available at* https://www.census.gov/prod/2012pubs/fhw11-nat.pdf.

We urge the agencies to carefully consider the strong scientific evidence and legal support for finding the prairie pothole region wetlands and several additional categories of non-floodplain wetlands and waters to be jurisdictional by rule. We urge the agencies to issue a final rule that includes these categories of non-floodplain waters as jurisdictional by rule where supported by the scientific evidence.

We appreciate the agencies' leadership in spearheading this historic "waters of the United States" rule revision, and we look forward to a final rule in 2015 that will provide greater long-term certainty for landowners and advance our collective efforts to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

Respectfully Submitted,

Jan Goldman-Carter
Senior Manager, Wetlands and Water Resources
National Wildlife Federation
901 E. St. NW, Suite 401
Washington, DC 20004